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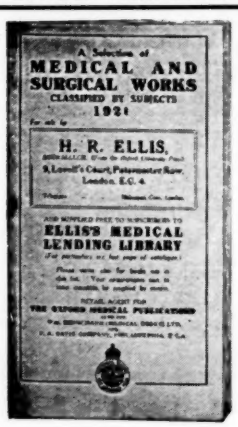

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IN FOUR SECTIONS—SECTION I.

INTRODUCTION.

THERE are few subjects in medicine of which an accurate knowledge is more urgently required than that of a woman's fitness for child-bearing. That a great strain is thrown upon the maternal heart during pregnancy and labour is well known. It is a matter of experience, too, that the pregnant state may throw more work on the heart than it can bear, with the result that the mother's life is lost, or her health irreparably impaired. The child, too, often dies. These disastrous happenings surround a natural process with dread and mystery, for the dread is aggravated by the fact that the source of danger is not clearly realised. As a result, all sorts of signs are looked upon with suspicion—signs innocent as well as signs grave. Needless to say, this obscurity does a great deal of harm. Many women are subjected to unnecessary alarms and restrictions when pregnant; others have to suppress the natural desire of motherhood; while connubial relations are often disturbed by warnings and hints of dangers which may never arise.

Defect in Medical Knowledge.

This unsatisfactory state of affairs is entirely dependent on a defect in medical knowledge which it is quite possible to remedy. That the matter is not worse is in a measure due to the fact that the vast majority of women, especially women of the working-classes, never have their hearts examined. Were they systematically examined, abnormal signs would be discovered in many instances; the significance of these signs would not be understood; grave doubts would be aroused. Thus, many who have passed unscathed through the pregnant state would have been unnecessarily frightened and alarmed.

When we seek for an explanation of our ignorance on this subject we find that it is due to the fact that medical knowledge has not advanced far enough to enable us to understand the meaning and significance of certain physical signs. Moreover, we find a new difficulty when we come to ask ourselves in what way our lack of knowledge can be made good. Gradually it is forced on our minds that if we would understand clearly defects and their origins we must go back to the beginning and consider the way in which, at present, the subject-matter of these chapters is investigated and taught.

The teaching of disease of the heart comes within the province of the physician. When, however, one comes to estimate the opportunities the physician has for dealing with the relation of heart disease to pregnancy, one soon discovers that his practice never brings him into contact with pregnant women except when one of these latter is referred to him for an opinion. On these occasions it frequently happens that, instead of frankly recognising that his experience does not justify him in claiming a knowledge of the subject, he gives a prognosis of the "guarded" type. He says in effect: "The patient may undergo pregnancy safely; on the other hand, there is a possibility that she may not." The effect of this is that the patient is left with a vague notion that some dread fate hangs over her head. In other instances the physician "plays for safety," and forbids the pregnancy, yet these patients may be perfectly capable, in many cases, of undestaking it.

The obstetric physician, if we may judge from modern text-books, has never taken the trouble to understand the elements of cardiology; in consequence he continues to pursue his enigmatical methods. While the advances in cardiology are barely mentioned in books on general medicine, they are not dealt with in books on obstetrics. In the recent text-books on this latter subject which I have read there is not the slightest indication that any advance has been made in the study of the heart during the last forty or fifty years—the writers apparently being unconscious of the revolutionary changes which have taken place in our knowledge of this organ in this period of time.

I am emphasising this point for reasons which have only an indirect bearing on the matter in hand. I wish my reader to visualise clearly the methods peculiar to medical investigation. Pregnancy is not the only condition which is shrouded in darkness. There are a great many other questions of a similar kind which are an integral part of the practice of medicine and which await inquiry. No progress, I believe, can be made in regard to them till it is understood how medical investigations should be conducted. The matter of heart disease and pregnancy serves thus as an illustration of a wider difficulty. It shows, if we will but learn the lesson, how completely our present-day method of medical research fails of its purpose. It is my aim to indicate the nature of this failure, and to explain in what manner I conceive that success may be attained.

Personal Experiences.

My attention was early directed to the subject of Heart Disease and Pregnancy by a tragic experience which occurred soon after my entrance into general practice, about forty years ago. I attended a young woman, 35 years of age, for a miscarriage at the third month of her first pregnancy. I discovered then that she had a presystolic murmur; so far as my investigation of the condition went, there was nothing more the matter with the heart. I had a vague notion that mitral stenosis was a serious embarrassment to the heart in pregnancy, but of the source of danger and its nature I had no knowledge. The woman left my neighbourhood for a year, at the end of which time she returned to her father's house, seven months pregnant, and with a considerable œdema of the legs. This œdema increased until, when labour set in at full time, she was much swollen not only in the legs, but in the abdomen. The external genitals were so œdematous that an examination per vaginam could be carried out only with difficulty. As the labour proceeded little progress was made: the suffering was very great, and there was marked distress in breathing. The patient had to lie propped up in bed, a position which rendered the use of instruments impossible. Moreover, so profound was the sense of suffocation that attempts to give chloroform were resisted. Two practitioners of much experience saw her, but after many hours of suffering she died undelivered, from extreme exhaustion.

I had, at that time, a fairly large midwifery practice, and, on several occasions during the next few years, I had some rather trying experiences in attendance on women with heart trouble, though no other case proceeded to such a disastrous ending. I noticed, however, that in a number of patients with damaged hearts the pregnancy further impaired the functional efficiency of that organ. The importance of this being thus forced upon me, I read carefully all the available literature. This, indeed, confirmed the view I had formed as to the danger in mitral stenosis, but gave me no enlightenment about the risks in other forms of heart affection. There were many vague hints of the evils arising from valve lesions, but of sufficiently definite information to enable me to recognise which types of these lesions were to be feared there was none. Even the changes occurring in the normal heart during pregnancy were very imperfectly described.

State of Knowledge of Cardiac Phenomena.

I made a note of the results of my reading, and propose to give the gist of it here as a kind of review of the state of knowledge of cardiac abnormalities prevalent forty years ago. That this may be found strangely apposite to-day by certain of my readers will only show, I fear, that the attitude of the profession of those early times is still the attitude of the bulk of teachers and authors. Indeed it seems to me, as I turn back to these old pages, that the trend of modern medicine, both in teaching and investigation, is to render the solution of such problems as the relation of pregnancy and heart disease impossible. Before the discovery of auscultation and the use of the stethoscope, about 100 years ago, experienced physicians estimated the state of the heart by its manifest functional efficiency; and in reading the authors before that date, I find that many of the views which I have arrived at were anticipated by them. There is no doubt in my mind that the line pursued by those physicians was sounder than that which has been followed since the introduction of mechanical devices. The coming of the stethoscope was the beginning of a method in clinical research which has greatly hampered the practice of medicine, in that the introduction of mechanical methods has led to a confusion as to the kind of knowledge which these methods are capable of affording. This criticism applies not only to the stethoscope and its various modifications, but to all the other instruments which have since been employed in the examination of the patient. I need mention only the sphygmograph, polygraph, electro-cardiograph, and blood-pressure instruments.

The discovery of the sounds of the heart and the various modifications of these sounds was followed by a period in which a great deal of time was spent on auscultation and on the discussion of the phenomena revealed by it. At first the cause of the cardiac sounds was not clear; a long series of observations, experimental and clinical, was therefore undertaken, to find out the manner in which the sounds were produced. I do not dispute that a great deal of valuable knowledge was thus accumulated.

One unfortunate consequence of this concentration upon the new method, however, was to give it a preponderating importance in the examination of the heart, and to minimise the value of the study of other phenomena, with the result that unjustified conclusions were drawn from mere modifications of the sounds. This, as has been indicated, was an error inherent in the view taken, at that time, of the possibilities of the new instrument. The physician who detected an abnormal sign supposed that in detecting it he had obtained information of a sort hitherto only obtainable by a test of functional capacity. He believed that he had gained knowledge entitling him to make a prognosis without the labour of determining how far the patient's activities were already curtailed. What he failed to see was that so long as he did not know the mechanism of production of the abnormal sound, nor the after-histories of people who might have this abnormality, he could not properly base conclusions on its presence. Thus, in reading the early literature of heart affections, since the introduction of the stethoscope, we find a grave significance attached to the presence of a bruit, at a time when the cause of the bruit was unknown and the kind of information which it conveyed was not understood. I have sought for an explanation of this rather astonishing state of affairs. I find it, I think, in the probability that a physician, examining dying patients in whom a bruit was present, would attribute the failure of the heart to the cause of the bruit. That this is the correct explanation is rendered more likely because we find similar reasoning following the discovery of a sign by any new method. Thus, to-day, physicians and "heart specialists" may be observed attributing serious significance to peculiarities detected in graphic or electro-cardiographic records or in blood-pressure readings before they understand the nature of the signs on which their gloomy forebodings are based.

I dwell on this to draw attention to the fact that medical knowledge has not even yet advanced so far as to enable investigators to understand the principles which should guide them in recognising the significance of an abnormal sign. They do not know how to apply their observations in practice, nor what steps to take to obtain an estimate of their significance. This statement may seem to be an exaggeration; if, however, the reader will consider the methods, to be described later, which I was compelled to employ in order to find out the significance of a symptom, he will, I think, realise not only that a defect in knowledge existed, but also how it came to exist; and why it is still with us.

The hasty conclusions formed by the early observers in regard to the significance of murmurs have hung like a mill-stone round the necks of the profession; to-day these conclusions mislead the vast majority of doctors, and cause much unnecessary trouble and injury to people in many walks of life.

THE NORMAL CHANGES IN THE MATERNAL CIRCULATION DURING PREGNANCY, CONFINEMENT, AND THE PUERPERIUM.

Methods of Investigation.

In my endeavour to find out wherein lies the danger of pregnancy to women with heart disease, I experienced most difficulty in determining how to set about such an inquiry. The study of patients with damaged hearts proved fruitless and misleading, for I was not able to tell the significance of some of the symptoms. I had already supposed certain of these latter to be abnormal and of grave significance, on grounds which I was coming to recognise were insufficient. At last I realised that it was necessary for me to understand the phenomena which occur in healthy women if I was to form a clear idea of the changes taking place in consequence of the accommodation of the circulatory system to increased work.

I began, therefore, to observe women during their confinements, noting all the signs which I took to be departures from the normal, and also those which occurred as a consequence of the straining during the labour. I soon found quite a number of changes; for example, modification of the sounds, murmurs, irregularities, displacement of the apex beat outwards to the left, some duskiness of the countenance, and so on. Some of these signs were modified or disappeared during the puerperium. I was at a loss to explain their presence or their significance, and I saw that the subject required far more thorough investigation. I recognised that it would be necessary to watch the onset of these signs, and the conditions or factors which caused them; then, it would be necessary to watch patients for a long time after their confinements to see if the signs disappeared or remained to give rise to trouble in the future. This latter part of the problem was one of extreme difficulty. For it was not only necessary to note the progress of the patient, but also to find an intelligent method of estimating the significance of the changes which might be observed.

In the routine of my work as a general practitioner, I had opportunities of seeing women before they became pregnant. I made careful notes of the state of the heart and circulation in such of these as I expected would become pregnant. When they consulted me afterwards for early troubles, such as sickness and vomiting, I examined their hearts at intervals. Further, I examined those who bespoke my service for their confinements, and kept them under observation till labour began. As time went on, I found that one sign after another required particular observation, and so I had to adopt special methods to obtain the information I desired. Thus I found œdema of the lungs to be a very important matter in heart failure, and its relation to the pregnant

state had to be specially considered. I found, too, that the embarrassment of the circulation increased during the last months of pregnancy, and that a number of new symptoms appeared then; for example, murmurs, irregularities, and pulsation of the veins of the neck. It was necessary to know exactly when such changes began; so I used to ask the patients to stay in bed on certain days till I had visited them. The different points were carefully noted. Finally, the significance of these signs, as they were related to the heart's efficiency, had to be considered. This led to an inquiry, extending over many years, which is not yet complete.

I will deal specifically with the more important symptoms in later chapters; here I propose to summarise the results of the alterations which occur in healthy people.

CHANGES DURING THE EARLY MONTHS OF PREGNANCY.

Practically no changes in the circulation could be detected in the early months of pregnancy. Sometimes sickness confused the picture, bringing in its train exhaustion, and variations of the pulse rate, but as time went on these disappeared.

Limitation of Response to Effort.

Towards the sixth month the response to effort began to be restricted, i.e. breathlessness appeared after an amount of exertion which had hitherto been accomplished in comfort. As a rule this never became extreme, and the woman was able to attend to her household duties; she felt the breathlessness chiefly on going upstairs.

Effect of Increase in Size of Uterus.

About the seventh month the uterine tumour altered the shape of the chest—widening it out so that the circumference gradually increased. The chest was measured immediately under the breasts and, as full time approached, the circumference increased considerably in some cases. Immediately after delivery the circumference diminished, and day by day it decreased till some weeks after confinement it had returned to normal.

The following are a few examples:

CASE 1.	Inches.
At full time	28
Immediately after birth of child	25½
Four days after birth of child	24½
CASE 2.	
At full time	26½
Immediately after birth of child	26
Seven days after birth of child	26
CASE 3.	
At full time	29
Immediately after birth of child	26½
One day after birth of child	25½
Three weeks after birth of child	23½

Displacement of the Heart.

Coincident with the change in the chest circumference the heart was frequently displaced until the apex beat was pushed out one inch beyond the left nipple line, and upwards to the fourth interspace. After labour the heart gradually swung back into its normal position.

Hypertrophy of the Left Ventricle.

It is well to bear this normal displacement in mind. For a long time it has been held that the left ventricle hypertrophies during pregnancy and undergoes some sort of involution after confinement. The evidence for this view has been based chiefly on theoretic grounds, on some very imperfect post-mortem observations, and on the displacement of the apex. Further, the safety of chloroform anæsthesia during pregnancy has been attributed to the same circumstance. No evidence of hypertrophy could be perceived.

Stasis of the Lung.

Accompanying this widening of the chest, there is a tendency for stasis to occur at the bases of the lungs. This will be dealt with in speaking of the failure of the right heart. In order to estimate the factors which embarrass the right heart, the lessened effect of the movements of respiration had to be considered. I found that normally there was a tendency to stasis even in healthy women when pregnant. In the periodic examination of pregnant women I found that a few of these, after lying in bed all night, had crepitations at one or both bases. These crepitations disappeared after one or two deep breaths, and were never present during labour. They returned for a few days after the confinement. The meaning and significance of this sign will be discussed later.

Venous Stasis.

A variety of phenomena appeared on the venous side of the circulation. In a number of patients the veins of the legs became swollen and varicose—in some there was considerable swelling and varicosity of the veins of the thigh, and of the vulva. Hæmorrhoids were frequent. The cause of these changes is not clear to me. I lean to the view that they are the result of actual pressure on the veins in the pelvic or abdominal cavities. Some writers, however, say that these signs may appear at a stage so early that pressure is out of the question. I had not myself observed them at such an early stage. There is, no doubt, a marked change in the peripheral vascular system in the smaller arteries and veins, which is made evident particularly in the breasts. The mammary artery, usually imperceptible, becomes dilated, and probably the arteries generally dilate to a slight extent, though this is not capable of measurement. One can infer so much from the fact that many women become fatter during pregnancy. There is perhaps also an increase in the quantity of blood.

I find that some writers attribute the hæmorrhoids and varicosities of the vulva to back-pressure from the heart. That is an error, of little importance so far as this matter is concerned, but one which must be pointed out, as it misleads when we are dealing with heart failure. The idea that the heart fails by an engorgement affecting one chamber after another has long held the field. We are invited to picture regurgitation from one orifice after another until the right auricle and ventricle throw blood back into the venous system, causing the appearance of venous stasis, varicosities, and dropsy. While no doubt there is a little truth in the idea, it can be laid down that such an effect of heart failure has only a very slight influence and is not the cause of the phenomena attributed to it. I have seen many people die slowly of heart failure in whom none of these signs appeared. I have seen the right auricle and ventricle throw such quantities of blood back that the liver was distended and pulsated at each systole; yet there was neither venous stasis nor dropsy in the legs. Experience shows that varicose veins are frequently present in people with perfectly healthy and efficient hearts.

Pulsation in the Jugular Veins.

Another symptom usually, but erroneously, considered to be the result of this back-pressure is pulsation in the veins of the neck. During a systematic inquiry into the signs exhibited by the circulatory system my attention was arrested by the movements in the veins of the neck. At the time when I began the inquiry very little attention had been devoted to this subject. The pulsations indeed had been recognised, and graphic records of them had been obtained, but the nature of the movements taking place and their significance were not understood.

Among healthy women during pregnancy I found that these pulsations vary in an extraordinary way. They are present at one time, and absent at other times; sometimes they are small and barely

perceptible (Fig. 1), then again they become of great size (Fig. 2). The records of many patients showed that pulsations were often quite distinct before pregnancy. They might remain unaltered during the whole period till labour set in. During labour they practically always disappeared, but returned in a day or two after delivery, sometimes attaining a great size. Thus in the case from whom Figs. 1 and 2 were taken there

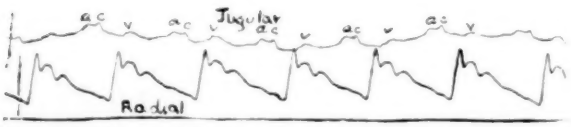

FIG. 1.—Tracings of the jugular and radial pulses the day after the confinement, showing only a faint movement in the jugular tracing.

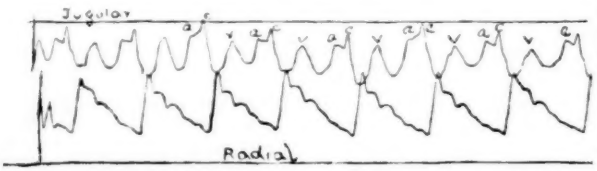

FIG. 2.—Tracings of the jugular and radial pulses the second day after confinement, showing a large movement in the jugular tracing.

was no jugular pulse during the labour, a faint pulse next day (Fig. 1), and a large pulse on the second day (Fig. 2). I attempted to correlate these variations with coincident changes in the heart—seeking for evidences in the size of the organ, in its sounds, or in its functional efficiency, but I failed to find any relation. I thought that the increased size of the venous pulse might indicate a dilatation of the right heart, but I found the increase taking place and the heart remaining normal in size, with no alteration of the cardiac sounds.

The disappearance of the venous pulse during labour seemed capable of a reasonable explanation. A false view of the effect of effort upon the heart has long been held—the view that the healthy heart dilates with effort. More careful observation reveals the fact that, instead of dilating, the healthy heart actually becomes smaller on effort. It will be realised, if thought is given to the subject, that this is to be expected. When effort is made dilatation takes place in the peripheral vessels. The result is that during effort there is, in the peripheral vessels, a relatively greater amount of blood than is present in them when the body is at rest. As the size of the heart depends partly on the quantity of its blood-content, with a diminution of the blood during effort, the size naturally becomes smaller.

The right auricle and the veins leading to it act as a reservoir to the ventricle. The pressure in the veins and auricle is never of itself able to distend the ventricle and cause dilatation; so that, when there is a free return of blood from the periphery, the jugular vein is never quite empty. The emptying and filling of the auricle and ventricle cause a variation in the quantity of blood in the jugular vein, and it is this which we recognise as the pulsations referred to, and which we can graphically record (Fig. 2). When, therefore, a larger quantity of blood is contained in the peripheral vessels, the jugular vein does not receive a sufficient amount for the movements occurring in it to be perceived. After the effort has ceased, however, the returning blood increases to such an extent that the reservoir becomes filled. The movements are then again visible.

In order to comprehend the relation of these pulsations to heart failure I watched patients with a jugular pulse for many years, noting the effects of effort and illness—particularly febrile illness. In rare cases I discovered great pulsation in the veins with certain forms of heart failure—but, on the whole, I found that neither the presence nor the absence of pulsation was of any use in estimating the efficiency of the heart. In those rare cases to which I have referred there were present other signs which gave a surer indication.

Where, on the other hand, the study of the jugular pulse became of the greatest value was in unravelling the mechanism of cardiac irregularities. By observing the changes in the jugular pulse, I discovered a method of differentiating between the waves produced and of relating them to their causes in the heart itself. This matter will be referred to in dealing with Heart Irregularities.

Dropsy.

The mechanism by which dropsy is produced is still one of the most obscure matters in medicine. My notes of cases of pregnancy show that in healthy women, at this time, swelling of the legs was far from infrequent. It was usually slight, but sometimes became very considerable. As it tended to get worse towards the end of the pregnancy, and as there were no accompanying changes in the heart, I attributed it to the pressure of the uterus on the veins. At all events, the women went through their confinements quite well, lived for years afterwards, and bore other children. Even those women who also had albumin in the urine did well. (I am not referring to cases of albuminuria which ended in uræmia. I had, like every other general practitioner, experience of these. My opportunities, however, were too restricted to enable me to get a full knowledge of the significance of this sign, which, be it said, still awaits elucidation.)

Cyanosis.

During labour, in many patients, the face becomes tinged and dusky, while the lips become of a dark red. I made a great many observations on the capillary circulation in this connexion, but nothing definite was elicited.

In many women systolic murmurs and irregularities appeared and disappeared. These will be dealt with subsequently.

CHANGES IN THE DISEASED HEART IN PREGNANCY.

Abnormal Signs appearing during Pregnancy.

I had many patients who showed abnormal circulatory signs. Let me say at once that the great majority of these passed through the pregnant state, confinement, and puerperium with no trouble. Thus, some cases of mitral stenosis did not seem to suffer in the least, while others suffered severely. Cases of irregularity showed the same variation—the great majority passing safely through, a few revealing signs of heart failure. Cases, again, in which the heart was weakened from other causes, but where there were no abnormal physical signs such as murmurs or irregularity, bore the pregnancy well and seemed little the worse afterwards. These latter were usually breathless and the victims of præcordial pain.

The Interpretation of Abnormal Signs.

At the time when I was making these observations, the results seemed terribly bewildering; they did not enable me to recognise where the danger lay—which was the object of my research—and their variations seemed without principle. I had forced upon me the urgent necessity of a more thorough knowledge of the fundamental nature of abnormal signs, the mechanism of their production, and the bearing of their causes on the heart's efficiency, especially under stress. To obtain this knowledge I began a new, long investigation into the meaning of all manner of cardiac symptoms. This investigation has occupied me for many years; it took me away from the study of heart disease and pregnancy.

I missed, therefore, the opportunity of studying directly heart failure in pregnancy in large numbers of women. On the other hand, I obtained some knowledge of the fundamental principles underlying the production of heart failure. The application of these principles to the cases of heart disease complicating pregnancy which I have since encountered has, I believe, demonstrated their usefulness. It has demonstrated also the value of the type of observation of which I am speaking. I had, as a consultant in London, a great many women referred to me by doctors who were anxious to know whether they were fit for child-bearing or whether, pregnancy having been incurred, there was danger. In these instances I made use of the principles I am about to describe. They guided me to an opinion. The results fully justified the faith I had learned to repose in them.

The Differentiation of Abnormal Signs.

In order to acquire a knowledge of the source of danger in heart disease complicated by pregnancy, I had to get a clear view of the heart's work, how this organ accomplished its work, and what were the signs when it failed to perform its duties in an efficient manner. I conceived that the key to this problem was heart failure. I searched the literature of the subject, but except when heart failure had reached an extreme degree, giving rise to dropsy, dyspnœa, and enlarged liver (sometimes spoken of as the "cardinal signs of heart failure"), little attention seemed to have been devoted to it. Indeed, so confused were the descriptions that no certain differentiation appeared to have been attempted between the phenomena of heart failure and those of other accompanying, but merely incidental, states. Nor was there any clearer distinction to be found between signs which indicated disease and signs in their nature physiological, or so little pathological as to be of no prognostic significance. Thus, it was recognised that murmurs or irregularities might in many cases be indicative of nothing serious. It was stated that there were other murmurs and irregularities which were of grave significance. What was not stated was how one might differentiate the serious from the trivial, the important from the merely incidental.

In the case of irregularities matters were in worse plight. Here there was no differentiation at all. I had not gone far into this subject before I found that progress was impossible unless and until I should be able to distinguish one form of irregularity from another.

The Significance of Abnormal Signs.

Even when, at last, I had succeeded in recognising clearly the different forms of irregularity there remained the important question: "What bearing does their presence have on the patient's future?" This question applied, as I saw, with equal force to the subject of murmurs. Attempts to answer it had in this latter instance been made, but they had not succeeded, for the matter was left in a very vague and indefinite state.

The question is one of such urgent moment to the rational practice of medicine that only the slightest consideration is required to convince anyone that a solution of it must be obtained. Nevertheless, I repeat, no really systematic endeavour to find a solution had been made. The prognostic significance of such common signs as murmurs and irregularities was by no means understood. The somewhat rule-of-thumb procedure which led to the vague notions then prevalent hindered as often as it helped.

The Misunderstanding of Prognosis.

When I reflect now upon the steps I took to obtain this knowledge I can understand to some extent why it had been neglected. Prognosis, at first sight, seems an easy business as compared with diagnosis. Moreover doctors, as students, have their prognosis given to them ready-made in terms of diagnosis. They are told, for example, that a murmur means a damaged heart. As soon as they are out of school they are placed in positions which impose the necessity of making prognoses. If they enter the army or navy they are at once put to the duty of examining recruits, a matter requiring a knowledge of prognosis. If they become examiners for life insurance the same knowledge is essential to the performance of their duties. In every field of medicine indeed where an opinion as to the future of an individual is concerned, the necessity of assessing the prognostic value of signs and symptoms is necessary. Thus the young doctor begins at once to act upon what he was taught. He accepts the ready-made prognosis and gets into the habit of using it. He says that "a murmur means a damaged heart," and does not doubt that he is right. Thus prognosis seems to be a matter of the greatest simplicity once a diagnosis of signs has been arrived at. The vast and vital difference between the sign itself and the nature and significance of it is overlooked or forgotten.

It is scarcely necessary to dwell upon the importance of a true knowledge of prognosis to a doctor who has to determine whether a woman is or is not fit for child-bearing.

Method of Arriving at Prognosis.

In my own inquiry into prognosis in heart affections I made many false starts before I recognised the principles which should guide me. One day, however, and quite suddenly, I put to myself the question: "What are you afraid of?" The reply was, of course, "Heart failure." At once there came the next question: "Do these signs indicate heart failure, or do they foreshadow its occurrence?" This brought home to me my lack of knowledge.

I realised at least, clearly, the difference between the mere recognition of a sign—diagnosis—and its interpretation. I saw that prognosis hitherto had been accomplished by a process akin to jumping over an obstacle. One found a sign and called it a disease, instead of attempting to elucidate the mechanism of its appearance, or labouring to watch the responses to the calls of life of the man or woman showing it. That kind of "prognosis" was a double guess. One guessed that a murmur meant heart disease, and then one guessed again that heart disease meant an early death. Thus there was forced on me the need to watch and to follow individuals with all forms of cardiac abnormality, year in and year out. To study them in health and in periods of acute illness. To be with them during prolonged bodily exertion. To note, if possible, the very earliest signs of heart failure, and to observe every variation of these signs during the years of their development. To make myself familiar with periods of improvement and with periods of regression. Finally, to be present if patients died and to undertake post-mortem examinations. These labours I made some attempt to carry out. Their results will be detailed later.

GIFT FOR X RAY RESEARCH.—The board of management of the Royal Infirmary, Manchester, have accepted a gift of £4000 from an anonymous donor in aid of research work in connexion with "Intensive X Ray Therapy." The donor expresses the desire that a portion of this money should be expended in paying the expenses of a research scholar who is to study the methods adopted in various clinical centres—e.g., Erlangen, for the utilisation of intensive X ray therapy in relation to the treatment of cancer. The intention of the donor is to stimulate inquiry into a recently suggested means of dealing with malignant disease. Dr. Anderson, who was trained at the Liverpool Royal Infirmary under Dr. Thurstan Holland, has been appointed research scholar, and he will shortly proceed to Erlangen. The board of management have also made arrangements to have the necessary apparatus fitted up in their X ray department.

A Clinical Lecture

ON THE

SURGERY OF THE PITUITARY GLAND.

Delivered at the London Hospital on March 19th, 1921.

BY A. J. WALTON, M.S., F.R.C.S., M.B., B.SC.,
SURGEON TO THE LONDON HOSPITAL.

IT is one of the most distressing and disheartening things in life to realise how largely our appearances, our actions, our morals, and our very destinies are dependent upon our internal secretions over which we have no control. Just as gross changes in certain glands cause marked symptoms, so also is it probable that variations in character are due to smaller changes. Are we then to condemn a person as dull and uninteresting because his thyroid secretion is diminished, while we praise the greater activity and alertness that accompanies a slightly increased secretion? Are we to condemn as grossly immoral one with well-developed sexual glands and accept as an example of moral rectitude one who has suffered from parotitis in adolescence? Is a patient with a lowered pituitary output to be regarded as mentally weak and foolish, while one with an increased secretion is to be praised for his bright intelligence and keen mentality? Rather do we hope that by careful study of the effects of the internal secretions we may be enabled in the future to alter the characters of many and restore to them the power of enjoying those two things in life that are most worth having—namely, physical fitness and sunshine in the open country. Of the more gross changes our knowledge has already advanced considerably, and I propose to discuss to-day the marked changes that the pituitary gland, which is little, if any, larger than a bean, may cause in the whole body when it is the seat of disease. In order to group the symptoms in a manner easy of understanding, I must briefly consider the development and functions of the normal gland.

DEVELOPMENT OF THE NORMAL PITUITARY GLAND.

From the roof of the stomadeum immediately adjacent to the oral plate there grows upwards a small pouch known as Rathke's pouch. From the floor of the fore-brain there is a corresponding downgrowth known as the infundibulum. These two processes come into contact and together form the pituitary body. The cells of the anterior portion undergo considerable proliferation. At first they form a somewhat triangular sac known as the pituitary sac. The cavity later becomes filled up and the proliferating cells form glandular spaces containing a small amount of colloid material. This portion remains distinct in adult life and is known as the anterior lobe. The stalk corresponding to Rathke's pouch passes, in the fœtus, immediately in front of the notochord and between the trabeculæ cranii, thus later, when these structures fuse to form the basi-sphenoid, all communication is shut off from the pharynx. It is interesting, however, to note that certain squamous-celled tumours may arise in or about the pituitary and that Duffey states that they probably originate in the remnants of Rathke's pouch, which may persist in the body of the sphenoid bone or beneath the capsule of the upper surface of the anterior lobe. The anterior lobe forms about two-thirds of the total pituitary gland. The infundibulum grows downwards and enlarges at the extremity to form the posterior lobe. Although it loses its lumen the infundibulum persists and forms the stalk of the pituitary which connects the gland with the floor of the third ventricle. Between the two portions, formed in part from the anterior and in part from the posterior, is the pars intermedia, in which persists the cleft corresponding to the pituitary sac.

The fully developed pituitary body is a rounded structure, somewhat flattened from above downwards, which fills the pituitary fossa of the sphenoid bone. It is about half an inch in its widest diameter and is entirely surrounded by dura mater. The pituitary fossa is roofed in except for a small opening in the centre, through which passes the infundibulum. The relationships of the gland are of extreme importance surgically. Below it rests upon the portion of dura mater lying upon the basi-sphenoid. The latter is deeply hollowed out anteriorly by the sphenoidal sinus, from which cavity the pituitary gland is only separated by a thin layer of bone. The antero-inferior wall of the sphenoidal sinus is formed laterally by the cornua sphenoidalia and medially by the ethmoidal spine, to which is attached the vomer. Hence, if an instrument be driven up the sphenoidal sinus through the nose, it will pass up through the basi-sphenoid into the pituitary fossa. Anteriorly lies the olivary eminence, on which is placed the optic chiasma, so that this structure and the commencement of the two optic nerves lie immediately in front of and above the pituitary gland. Laterally the cavity is bounded by the reflection of the dura mater which forms the cavernous sinus and which contains the internal carotid artery and the third, fourth, fifth, and sixth nerves. Anteriorly the internal carotid turns upwards on the outer side of the optic nerve. The anterior cerebral and communicating arteries together form a bridge uniting the two carotids across the upper surface of the optic nerves, which may be compressed by the arteries when the pituitary enlarges. Immediately behind the internal carotid the anterior portion of the optic tract lies on the outer border of the pituitary fossa. Posteriorly is the depression at the apex of the petrous bone, forming the cavum Meckelii, in which lies the Gasserian ganglion. Posteriorly, the dorsum sellæ, with the posterior clinoid processes, sharply limits the pituitary fossa. Within the fossa and surrounding the gland is a small sinus, the circular sinus, formed by anterior and posterior transverse channels which pass from one cavernous sinus to the other. It will thus be seen that the gland is closely surrounded by most important structures and that surgical approach is associated with considerable difficulty.

STRUCTURE AND FUNCTIONS.

The anterior lobe is formed of a glandular epithelial structure, the glands being tubular in nature and the whole portion being extremely vascular. The glands have no ducts and may often contain a colloid-like material very similar to that of the thyroid gland. The pars intermedia, which surrounds the cleft, is also epithelial in nature, but less coarsely granular. The epithelial cells are arranged in vesicles which also contain colloid material. It is said, however, that the colloid of the pituitary gland never contains iodine. The posterior lobe is formed of a vascular connective tissue which has lost its original glial structure and more closely resembles true connective tissue.

There is still a certain amount of doubt as to the actual functions served by the different portions, for both experimentally and clinically it is difficult to obtain a lesion which is limited wholly to one or other lobe. There even seems to be some doubt as to the effect of total extirpation. Cushing found that complete removal was followed by the death of the animal, but Sir Victor Horsley obtained opposite results. The posterior lobe is usually grouped with the pars intermedia and it is probable that the greater part of its function is due to this latter portion, for it is difficult to see how a structure formed mainly of connective tissue, like the true posterior lobe, will have any definite function. Evidence at present obtainable indicates that the functions are as follows:

Anterior Lobe.—The secretion of this portion would appear to control calcium metabolism and the growth of the skeleton, including the bony, cartilaginous, and

connective-tissue structures. Possibly it may control the deposit of fat and the growth of the sexual glands.

Posterior Lobe.—The secretion of this portion, which includes the pars intermedia, has very definite effects. Extracts which are now so largely used in clinical medicine are dependent upon the secretion of this portion. The constituents are several in number and may be grouped as follows:—

(*a*) A pressor body. Injection of the extract is often followed by a very marked rise in the blood pressure, and for this reason pituitary extract is very frequently used to combat surgical shock.

(*b*) A depressor body. There is a constituent which, after the pressor effect has died away, leads to a decrease in the blood pressure. The activity and time of onset appear to be variable, so that occasionally, when the pituitary extract is given to a normal person, or to a patient suffering from shock, the depressor effect will be the first to become evident; hence the use of pituitary extract is not wholly without danger.

(*c*) A diuretic body. There is a constituent which appears greatly to increase the secretion of urine, and leads to a very definite polyuria which is associated with dilatation of the renal vessels. In this respect the effect upon the arteries differs from that upon the arteries of the rest of the body.

(*d*) A galactagogue. When pituitary extract is administered to a lactating animal there is marked increase in the flow of milk, but this is apparently only of short duration, so that the total flow over a prolonged period does not seem to be definitely increased.

(*e*) One of the most constant effects appears to be powerful contraction of unstriped muscle. This is especially noticeable in the intestine and uterus, so that the extract is largely used in the treatment of various forms of intestinal paralysis and in some varieties of uterine inertia.

(*f*) There is a body, the presence of which appears to diminish the carbohydrate tolerance. There is some doubt as to whether this body is formed by the anterior or posterior lobes, but it is more probable that it comes from the anterior, for with all conditions of hypopituitarism the tolerance is usually increased, whereas glycosuria may be present with acromegaly. In some cases it would seem that the anterior lobe, and possibly the pars intermedia, may take the place of the thyroid or sexual glands, for there is an increase of the colloid material after a thyroidectomy, during pregnancy, and after castration.

CLINICAL DISTURBANCES.

The symptoms associated with lesions of the pituitary fall naturally into the three following groups:—(1) Disturbance of the internal secretions. (2) Local pressure effects. (3) General pressure effects. It not uncommonly happens that all three of these groups are present in the same case but in others only one or more may be found.

(1) *Disturbances of Internal Secretion.*

Just as there is considerable doubt as to what functions should be apportioned to the different parts of the gland, so there is also some doubt as to which parts of the gland are mainly at fault in different diseases. The following is, however, in the light of our present knowledge, a useful working classification:—

Anterior Lobe.—(*a*) Increase of function: (1) In young patients = gigantism; (2) in adults = acromegaly. (*b*) Decrease of function: (1) In young = lack of growth, ateliosis (Lorain's disease); (2) in adults (?).

Posterior Lobe.—(*a*) Increase of function (?); (*b*) decrease of function: (1) In young = dystrophia adiposa genitalis (Fröhlich's disease); (2) in adults = adiposa dolorosa.

Gigantism.

It is probable that not all giants have a lesion of the pituitary gland, but that there is a close association has been realised since the work of Sternberg, who showed that 20 per cent. of acromegalics are giants and 40 per cent. of giants develop acromegaly. Post-mortem examinations of giants show also that the pituitary gland and the pituitary fossa are very frequently enlarged. Brissaud was the first to point out that acromegaly was probably gigantism of adult life, or that gigantism could be regarded as acromegaly occurring during the period of growth. He also showed that examples of acromegaly and gigantism might be found in the same family. As a general rule the overgrowth is symmetrical, and beyond being of unusual size the patient may show little or no abnormality.

Acromegaly.

This condition, first completely described by Pierre Marie in 1886, appears to be definitely dependent upon an enlargement of the pituitary gland. There is nearly always an overgrowth of the anterior or glandular portion of the gland, but cases are reported in which there has been a hæmorrhage or the formation of a cyst in the anterior lobe. Males and females appear to be almost equally affected and the disease most commonly commences after the age of 30. It has been reported, however, as commencing at a much earlier age, and it is in such cases that there is more likely to be a general overgrowth leading to gigantism. The onset is as a rule slow, but when well established the changes are very characteristic and easily recognisable.

Spine.—The individual bones are thickened and there is a definite kyphosis. The patient may not notice a general increase in the height, but some will state that they have grown several inches since the onset of the symptoms. In three of my cases the height had increased from 1–3 inches.

Thorax.—The thorax is markedly enlarged, widened, and deepened. It projects more in the lower part and there is a wide subcostal angle. The pelvis is enlarged in all directions and the bones are generally thickened. This is especially noticed in the iliac bones and at the points of muscular attachment.

Head and Face.—It is in this area that very characteristic changes are seen. The cranium is but little altered, but the face as a whole shows general hypertrophy, especially in the vertical direction. The forehead appears low and narrow, but the orbits are much enlarged and thickened and an X-ray will show that to a certain extent this is due to an increase in the size of the frontal sinuses. Owing to the size of the orbital margins the temporal areas appear to be depressed. The upper jaw shows a slight overgrowth, but the lower jaw shows a very marked hypertrophy. The method of the overgrowth is unusual. It is not due, as would be expected, to a simple deposit of bone beneath the periosteum, because the individual teeth become widely separated from one another, and hence there must be an increase of the bone throughout. In the late stages the teeth are so much separated that they form an arch greater than that of the upper teeth. At the same time they may be everted by the pressure of the hypertrophied tongue. The jaw is enlarged from above downwards; the great length of the face is largely due to the hypertrophy in this area. An X-ray will show overgrowth of the bone in the orbital regions and some thickening of the tables of the skull. The pituitary fossa is generally enlarged, and there may be atrophy or erosion of the clinoid processes. The changes are not limited to the bone: the eyelids are thickened and hypertrophied and the nose is considerably enlarged, being lengthened and widened from side to side. The tissue over the cheeks is thickened and prominent. The lips are greatly swollen and thickened, being often negroid in type. The tongue is hypertrophied, so that it may project beyond the teeth and may interfere with speech. The ears are also thickened and enlarged.

Hands and Feet.—The changes in the hands and feet are even more characteristic than those in the head and face. They are much increased in size, the enlargement being due to an increase in the width rather than in the length. This is especially noticeable in the feet; patients will often state that since the onset of the disease they have had to take two sizes larger in boots, and that even then a labouring man's boots have to be used in order to gain the increase in width. The thickening in the hands is seen to consist of all the tissues, bones, muscles,

connective tissue and skin, but the fingers are more or less cylindrical and much wider than normal. The nails do not share in the hypertrophy, so that they seem to be relatively small. The thenar and hypothenar eminences are increased in size, but the subcutaneous tissue does not pit and the thickening is therefore not due to œdema. The feet are affected in a similar way. There is a great increase in the width, especially at the base of the toes, and the heels may appear massive. The toes are all enlarged and more cylindrical than normal, especially the first toe. The X rays may show in the early stages little or no change in the bone, the hypertrophy being due

FIG. 1.—Typical case of acromegaly, showing changes in face, hands, and feet.

to an increase of the soft tissues, but in more advanced cases there is always a definite deposit of new bone, especially under the periosteum of the proximal phalanges. Even when the heels appear to be very massive the X ray will often demonstrate that there is no change in the astragalus. As a rule the hypertrophy does not extend beyond the wrist and ankles, but not uncommonly there is a marked muscular hypertrophy of the arms and legs. In the later stages of the disease the muscles may atrophy. Occasionally an X ray will show that the distal extremity of the limb bones have a new deposit of bone beneath the periosteum, but as a rule they are unaffected.

Sexual Glands.—These also show very constant changes. In women the breasts become smaller than normal, and amenorrhœa is one of the earliest symptoms. The external genitalia are hypertrophied, both in the male and female, but there is always a marked decrease in sexual desire.

On the vascular side the heart is often hypertrophied, the arteries are thick, and the veins varicose. The blood pressure is generally high, but often shows a marked variation. The thyroid may be small and the larynx hypertrophied, so that in women the thyroid cartilage may be as prominent as in men and with this the voice becomes deeper and stronger. The skin shows profuse sweating and pigmentation, the hair becomes very coarse and wiry, and in women its distribution becomes more of the male type. The intelligence is as a rule good, and in two of my cases the women were of unusual intelligence—were, in fact, the guiding spirits in their homes. Later there may be a general depression of the mental functions, with drowsiness, but this probably only occurs when the general symptoms of pressure are becoming more in evidence. There is often polyuria, and not uncommonly a marked glycosuria which can usually be controlled by diet. In the early stages especially, the patients will often complain of severe pain in the limbs and joints, of headache, and pain in the eyes. It will be seen therefore that in females this disease tends rather to produce the male characteristics. There is a general increase in the skeleton with muscular hypertrophy, an overgrowth of the hands and feet with hypertrophy of the phalanges, an alteration in the larynx with a deepening of the voice, an alteration in the distribution of the hair with atrophy of the breasts, and the development of a more masculine intelligence.

The following is a typical example of the disease.

CASE 1. *Pituitary Tumour with Acromegaly.*—J. S., a married woman, aged 42, was quite well until seven years ago, when she commenced to have pain and stiffness in the neck, so severe that she could not move her head. This has continued ever since. Shortly after she noticed her hair getting coarser and more curly. Four years ago she noticed hands and feet getting bigger, so that she had to wear boots two sizes larger; also noticed a marked but gradual change in her features. For six months her tongue has been getting bigger, and now interferes with speech. Sight has been altering for two years; she noticed that she was getting blind at the sides and now feels as though she were looking through a tube. For seven months she had severe thirst, and glycosuria was then discovered.

On examination there are characteristic changes in the face. Eyelids thickened and enlarged, orbital ridges massive and prominent; hair dark, coarse, and curly; tongue large; teeth in lower jaw are widely separated; the arch they form lies outside that of the upper teeth. Mouth large, lips thickened; lower jaw massive and prominent. Hands and feet much enlarged, chiefly from side to side; fingers thickened and cylindrical. Since the age of 21 patient has grown 2 inches. Spine is slightly kyphotic; thorax wide and massive, iliac bones enlarged. Patient is extremely intelligent, and has always been engaged in intellectual work; thinks herself that her memory and reasoning powers have been more active in the last few years. Vision very poor; she cannot read with either eye. Marked diminution in fields of vision, more so for white than for movement. Discs show distinct optic atrophy. No circulatory changes. Catamenia ceased at 39. Has had two children, 20 and 17 years ago; four miscarriages. She has never had any sexual desire. She is passing 80–90 ounces of urine a day, which contains 10 per cent. of sugar. An X ray examination shows a great increase in the width of the pituitary fossa and marked enlargement of the frontal sinuses. There is no new bone beneath the periosteum of the phalanges.

She was transferred to the care of Dr. A. W. M. Ellis, who was able with diet to eliminate the sugar from the urine, and in two weeks had raised the sugar tolerance to 100 grammes per diem.

Operation and Result.—After the lecture this patient was operated upon. A large osteo-plastic flap was turned outwards from the left frontal region. The dura was then raised as far as possible from the orbital plate and opened anteriorly. The brain was carefully elevated, and an extremely good view of the left optic nerve and the pituitary gland was obtained. The gland was enlarged and formed a swelling in front of the chiasma. Its capsule was opened and the whole of the gland removed from the dural covering. There was little or no bleeding. The brain was then replaced and the osteo-plastic flap returned.

She made an uninterrupted recovery from the operation and three weeks later was free from the severe pain. The eyesight was still poor: the vision of the left eye, much worse after the operation, has gradually improved, and she can now see nearly as well as before the operation. There has been no return of the sugar in the urine, but she is still on a modified diet.

The pathological report of the gland states that there was a solid spheroidal-celled carcinoma of the anterior lobe of the pituitary, with a greatly compressed fibrotic remnant of the anterior lobe.

Ateliosis or Lorain's Disease.

This may be regarded as the exact reverse of gigantism. The patient is small and has never grown, but the proportions of the different parts of the skeleton remain more or less normal, so that the condition is easily distinguished from achondroplasia. With the lack of growth there is a failure of the secondary sexual characteristics to develop, so that these patients appear to be much younger than they really are, and at the age of 35 or 40 may appear to be only 14 years of age. The bones are small and relatively fragile, and the muscular attachments poorly developed. The junctions of the epiphysis are greatly delayed but the formation of the bones is regular, so that there is no enlargement of the epiphyseal ends as may be seen with achondroplasia and some forms of thyroid insufficiency. The skull is small with thin bones and an X ray may show very definite changes in the pituitary fossa, which will vary with the nature of the lesion. If,

as is not uncommon, there is a simple cyst, the fossa may be much dilated and the clinoid process may be absorbed. The lower jaw is badly developed and there is a poor eruption of the teeth. The muscles are ill-developed and are more of the type found at the age of puberty. The skin is soft, delicate, and white, and resembles that of a young female. The body and face remain hairless and the voice is thin, high, and piping, so that the patient, if a male, retains many of the female characteristics. The sexual glands are never developed and the intelligence is always considerably below the normal. The appetite is poor, and there is often an alteration in the secretion of urine; the latter may be increased or diminished. There is no glycosuria, and in some cases the carbohydrate tolerance appears if anything to be above the normal. Later there will be a diminution in the fields of vision owing to local pressure, or the presence of headache from the increased intracranial pressure.

There is, as far as is known at present, no definite disease due to atrophy of the anterior lobe in the adult. It would, however, be of interest to investigate a series of cases of "fragilitas ossium" from this point of view, for the changes they present are those that would be expected with a loss of function of the anterior lobe. There is a similar lack of knowledge of any symptoms associated with an increase of function of the posterior lobe, but I have often been struck by the fact that an unusual intelligence—and by intelligence is meant, not the flabby, insipid condition which to-day is spoken of as an artistic temperament, a thing which is neither an art, nor a science, nor an intelligence, but merely a conceit—is frequently associated with marked physical activity and a high blood pressure, and if minor degrees of hypertrophy of the anterior lobe are, as one is led to believe, associated with a keen intelligence, it is probable that the other factors are dependent upon hypertrophy of the posterior lobe. It will be interesting to note whether, in the future, cases of arterio-sclerosis and chronic nephritis occurring in the young will be found associated with hypertrophy of the posterior lobe.

FIG. 2.—Patient, aged 14. Fröhlich's syndrome.

Dystrophia Adiposo-Genitalis (Fröhlich's Disease).

In this variety of disease the characteristic changes consist in a marked overgrowth of the subcutaneous fat. The deposit is more or less general, but has a tendency to be placed so as to exaggerate the female outline of figure, so that in the male there is a relatively greater thickening of the buttocks and thighs, and a subcutaneous deposit in the region of the breasts. At the same time the blood pressure is low, and there is a good or increased tolerance to carbohydrates. There are other changes which are possibly due to an associated diminution of the anterior lobe secretion. The patient, although generally of the normal height, shows a relatively poor development and the epiphyses are often late in joining. The skin is soft and there is no growth of axillary hair, the voice is high-pitched and squeaky, and the thyroid small. The genitalia remain small and undeveloped, and not uncommonly the intelligence is considerably below normal. The X ray often shows very marked enlargement of the sella turcica, for at operation or post-mortem the lesion is not infrequently found to be either a cyst or a tumour which has led to destruction of the pituitary gland.

CASE 2. *Pituitary Cyst with Decrease of Posterior Lobe Function.*—I. J., aged 14, was admitted to the London Hospital on June 14th, 1915. For two years she had had gradual onset of frontal headaches, chiefly noticed in the early mornings, and steadily increasing in severity. One and a half years ago there was a seizure during the night; she woke up and felt queer, and her mother states that she was stiff and unconscious and that she talked and rolled her eyes. For six months she had had occasional curious attacks in which the body shook all over so that she had to sit down. The attacks only lasted for one minute. For one and a half years the eyesight had been failing. At first she did not notice steps when walking and fell over them. Could not see people coming from the side, and was startled when she found them close to her. For seven weeks unable to read print; for six weeks occasional diplopia, and friends have noticed that she squinted; for the last ten days similar fits to the first evening. All occurred at night, and she vomited during and after the fits.

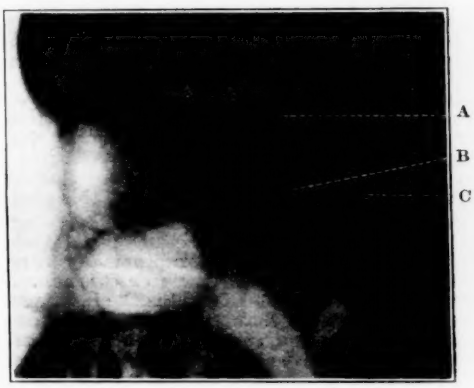

FIG. 3.—Radiogram of part of skull of girl shown in Fig. 3. A, ill-defined shadow above pituitary fossa; B, fossa much enlarged; C, posterior clinoid processes absent.

On examination noticed to be extremely fat; distribution of fat chiefly in trunk and thighs; the face was rounded and infantile. She had never menstruated; there was no pubic hair. Vision much affected; on right side could only distinguish light and darkness, on left side marked contraction of temporal field; both discs showed optic neuritis, which on the right side was passing on to atrophy. Slight incoördination of the rapid movements of right hand, otherwise no changes in the vascular system.

An X-ray examination of the skull showed a marked enlargement of the pituitary fossa, immediately above which was a blurred shadow.

On June 15th a large frontal osteoplastic flap was made on the right side and turned outwards. The dura was opened and the right frontal lobe carefully elevated until the right optic nerve and chiasma were exposed. Beneath the chiasma a large swelling was seen which, when punctured, allowed the escape of 4–5 drachms of thick fluid, which was collected into a tube and found to contain large quantities of cholesterin. A small drainage-tube was inserted and the flap replaced.

The patient made an uninterrupted recovery from the operation, and six weeks later was transferred to the medical side. She made, however, no improvement in her sight, and eight months later a letter was received to say that she remained blind, and had continued to have frequent attacks of spasm until her death at the time of the letter.

It is probable that the condition which Fearnsides has described as the "pudding-face type" is a milder degree of this same disease. There may be a slight general increase of the subcutaneous fat, the face is fat and rounded with red prominent cheeks, and the voice high and piping. The thyroid is often small and amenorrhœa is generally present. As in the

Fröhlich's type there are frequently alterations in the visual fields which may, if left, progress to complete blindness.

Adiposa Dolorosa (Dercum's Disease).

There is a considerable amount of evidence that this disease bears the same relationship to Fröhlich's disease as acromegaly does to gigantism, and that it is a change due to a diminution of the secretion of the posterior lobe which has occurred after the normal growth of the body has been completed. It is characterised by large irregular and generally painful deposits of fat, which may be diffuse in outline or may be more or less localised in the form of lipomata. The distribution of the fat is curious and very characteristic. The face, hands, and feet remain free and the deposit is most marked in the buttocks and thighs, so that at times the portion of the body above the waist is quite normal, while there is a very marked overgrowth in the portion below. At other times the fat is deposited in the back and shoulders and sometimes in the posterior aspects of the arms. Dercum himself noted a very marked change in the pituitary gland, but it is only right to mention that in many cases the thyroid has also been affected and that good results are claimed to follow the administration of extracts of this gland.

(2) *Local Pressure Symptoms.*

The chief local pressure symptoms are due to interference with the optic tracts or chiasma. The portion most likely to be affected is the inner part of the two tracts and the posterior portion of the chiasma—that is to say, the fibres which are passing to the two nasal halves of the retina. Therefore one of the earliest symptoms is a diminution in the temporal fields of vision, a bitemporal hemianopsia. Riddoch has shown that even in the early stages there is often a marked disassociation in the fields, not only for different colours but for fixed and moving objects. The fields may be considerably reduced before the patient is aware of any change, but he will shortly notice that objects disappear as they pass to one side of his visual field. In advanced cases he may state that he appears to be looking through a tube or opera glasses, or that he feels as if he were wearing blinkers. This alteration in the

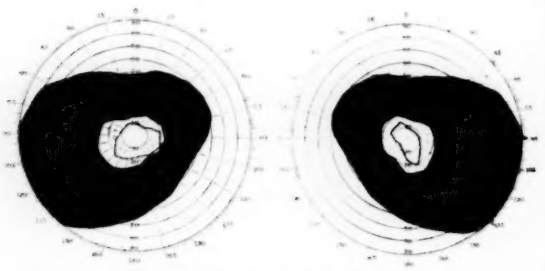

FIG. 4.—Tumour giving localised symptoms only. Field showing marked diminution of vision. Inner field is the area for red; outer field is area for blue.

fields of vision may be found with any of the variations of secretion, or it may be present alone. In the latter case a tumour is present which has not arisen from the pituitary itself, and has not yet led to sufficient pressure upon the gland to interfere with its secretion. If the condition be allowed to progress there will be added to the hemianopsia firstly a diminution of the vision in the remaining field and later complete blindness.

The other local pressure symptom is much less frequent. It consists of severe attacks of neuralgic pain in one or other side of the face which maps out either a part or the whole of the fifth nerve. It appears to be due to pressure either upon the Gasserian ganglion or upon the individual branches of the fifth nerve.

CASE 3. *Pituitary Tumour with Local Pressure Signs.*—S. B., a woman aged 55, was admitted to the London Hospital on Oct. 23rd, 1915. For 18 months had noticed her eyesight gradually failing; had to give up first fine needlework and later reading. For the same length of time there had been pain in the back of eyes and down left side of face. In October, 1913, examined by an oculist, who discovered bitemporal hemianopsia; in April, 1914, the nasal fields had also become restricted. Never severe headaches, and has not noticed any changes in the body structure. On examination found to be a healthy-looking woman, with a normal spine and skull. Mentally acute; no changes seen in body structure; thyroid gland normal. At this time, Oct. 23rd, 1915, marked contraction of the fields of vision; left eye almost completely blind, and could only just distinguish light and darkness; on right side complete loss of temporal field and considerable contraction of nasal field. An X ray examination showed a marked enlargement of pituitary fossa.

On Oct. 25th, 1915, an operation was performed by the frontal route. A left frontal flap was turned outwards as in the last case and the brain carefully elevated after opening the dura. A good view of the pituitary gland was seen and it formed a round bluish-red mass with the left optic nerve stretched and flattened over its surface. Owing to the practically complete blindness on the left side and the appearance of the optic nerve, it was decided that the vision could not be recovered, and the nerve was therefore divided. The tumour was then incised, and found to be formed of a soft but solid material, which was easily scooped out. This left a firm wall lying in the dilated sella turcica, from which there was little or no bleeding. Brain replaced and the wound closed.

Patient had a somewhat stormy convalescence, and for five days had aphasia and weakness of the right arm, and to a lesser extent of the right leg. This gradually improved, and six weeks later she was able to walk about the ward, her speech having completely recovered. In the first few days pituitary extract was administered, but this appeared to lead to a marked increase of the mental dullness, and it was therefore omitted. The pathological report states that the tumour was a solid acinar carcinoma of the pituitary.

Since operation patient has progressed favourably. A letter dated April 1st, 1921, states that she has marvellously recovered, and can do her own housework. The left eye is still blind, but there is a considerable improvement in the sight of the right. All pain and headache have ceased.

(3) *General Pressure Symptoms.*

A pituitary tumour, being situated within the calvarium, will sooner or later lead to an increase of the intracranial pressure. The extent of the pressure will vary considerably with the nature of the lesion. A tumour may be present which is essentially a cerebral tumour but which, growing downwards, interferes with the pituitary gland. In this case there will be marked evidence of intracranial pressure with slight signs of pressure upon the optic nerves and some evidence of a secondary diminution in the pituitary secretion. On the other hand, a lesion which commences in the pituitary gland will give a very marked interference with its functions, and definite local pressure signs, while it is only in the later stages that the neoplastic mass presses upwards sufficiently to give a marked increase in intracranial pressure. The first symptom is headache, and it is often difficult to determine how much of the pain is due to pressure upon the fifth nerve and how much to general increase of intracranial pressure. The early changes of optic neuritis are also often obscured by primary atrophy due to pressure upon the chiasma. The majority of cases of pituitary lesion which have been traced to a fatal termination present at the end definite evidence of an increase in the general intracranial pressure.

TREATMENT.

Most observers have laid stress upon the difficulty of classification of the pathological lesions found. It is now, however, generally recognised that the tumours, excepting only the rare forms of squamous carcinoma, are, as a rule, relatively benign and should be described as adenomata, in spite of the fact that microscopically they often appear to be carcinomatous. They resemble adenomata of the thyroid in so far that they frequently have a function. On the other

hand, those conditions in which there is a diminution of the secretion are usually associated with a cyst or some form of tumour, which instead of giving rise to an increase of function causes pressure atrophy of the gland. A true atrophy of the gland seems to be extremely rare, and the X ray photographs, as a rule, show an expansion of the pituitary fossa. Hence, on a priori grounds satisfactory results would be expected to follow operative interference in both types of case. On the one hand it would remove the tissue which was giving an excessive secretion, and on the other it would remove the structure which was causing the pressure atrophy. It must, however, be remembered that most of the conditions associated with an alteration of secretion are very slow in their progress. They may persist for years, and some of them, especially indeed acromegaly, may regress after a prolonged period. The operation is one of very considerable severity, and is bound to be associated with a relatively high mortality. For this reason it is doubtful whether an operation will frequently be advocated simply to relieve the hypo- or hyper-pituitarism. The chief indication will therefore be the presence of local or general pressure symptoms. If the visual fields are rapidly diminishing in size and there is danger of complete blindness an operation should certainly be considered, and the same is true if there is increasing headache or vomiting. The presence of definite early optic neuritis in addition to the commencing atrophy will be sufficient to warrant surgical interference. The presence of marked glycosuria in cases of acromegaly will generally indicate rapid progress of the lesion; but since (as in the case recorded above) it may be temporarily cured by medical measures it is often an indication rather than a counter-indication to operation. A rapid increase in the symptoms due to the changes in the internal secretions may also be regarded as an evidence of rapid progress, and therefore an indication for interference.

So much has been written of late on the different methods of approach that it is unnecessary to consider them again in detail. My own experience has been that an infinitely better approach can be obtained by the cranial route, and that although this operation may be somewhat more severe than the intranasal, it gives a very much better opportunity of removing the whole growth, which, as Cope has shown, tends at an early period to enlarge upwards. The operation therefore which I favour is a modification of the Frazier method. A large frontal flap is made and turned outwards. The lower limb passes around the margin of the eyebrow and the upper lies about three and a half inches above this, parallel to it, and thus well within the area of the hairy scalp. These two incisions are connected by a vertical limb in the middle of the forehead. The flap is made on the side which shows the greater diminution in the visual field, for it may happen that removal of the tumour will necessitate some interference with the optic nerve; hence it will always be wiser to interfere with the eye which is of less value. The incisions are deepened to the bone and trephine openings made in each corner. The four openings are united with a Gigli saw; the bony flap, which is thus about three inches square, is lifted up and turned outwards while still attached to the superficial tissues. The dura is now elevated as far as possible from the orbital roof, and when the limit of this reflection has been reached, an opening is made into it parallel with the orbital ridge. The frontal lobe in the brain is carefully elevated with a broad metal retractor, and the cerebro-spinal fluid gently swabbed away. Great caution must be exercised in elevating the brain lest the retractor cut into it. After a short period of careful sponging a clear view is obtained of the optic nerve and chiasma, and the pituitary gland and any tumour may be removed from the position in which it is most prominent. This is usually in front of and below the chiasma. By performing these steps slowly and carefully I have found that it is quite unnecessary to remove the orbital ridge and plate as advocated by Frazier. The operation is thus shortened and the possibility of resulting deformity is diminished. In only one case have I found it necessary to divide the optic nerve. In the others, although the operation has occasionally been followed by a slight increase in blindness, the latter has always improved. As soon as the tumour has been removed the dura is closed and the bone replaced.

The above operation—which, based upon Frazier's method but differing from it in that the orbital ridge and plate are untouched and that the dura is opened relatively early so as to allow the elevation of the brain—has now been performed in five cases. One was a case of acromegaly, one presented Fröhlich's syndrome, two had local pressure symptoms alone, and one had local and general pressure symptoms. In every one of them an almost perfect view was obtained of the pituitary gland. The optic chiasma and the optic nerve and tract on that side were clearly visible. The extent of the tumour could be determined, a point which is especially valuable when it has grown upwards out of the fossa. In no case was it difficult in removing the tumour to reach to the bottom of the sella turcica, and in this respect it appears to give as good an approach as can be possibly obtained by the intranasal route. In the one case where the optic nerve was destroyed the division of this structure greatly increased the view and allowed of easy removal of the tumour. If performed slowly and carefully the amount of shock is very much less than would be expected and in several cases it was hardly noticeable. Of the five cases two died from the immediate effects of the operation. Of the remaining three the one with Fröhlich's syndrome died eight months later with symptoms of the disease, probably from a re-filling of the cystic cavity. It is of interest to note that in the patient who has survived for five years the pathological report stated that the condition appeared to be carcinomatous.

A NEW GENERAL ANÆSTHETIC:

ITS THEORY AND PRACTICE.*

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PART I.—BY R. L. MACKENZIE WALLIS.

THE observations recorded in this paper have been obtained by us with the use of a new anæsthetic compound. The theory and chemical details have been worked out by myself, and the application of this compound as an anæsthetic by Dr. Langton Hewer. The details of manufacture will be described in the first part of the paper, and the results obtained upon a large number of patients in the second part. The discovery of a compound possessing powerful anæsthetic properties, which has no relation chemically to either chloroform or ether, is the result of many years of work upon the subject.

Such chemical compounds as ether and chloroform were known for many years before they were applied as agents for producing general anæsthesia. The history of anæsthesia and anæsthetics is of comparatively recent origin, and it is not surprising therefore to find many gaps in our knowledge. A vast amount of work is necessary before this difficult and complex subject is elucidated; and we are at present merely working on the borderland.

* A paper read before the Section of Anæsthetics, Royal Society of Medicine, April 1st, 1921.

The Use of Ether as a Vehicle.

For many years I have been engaged upon the problem of the purification of ether; and during my service in India had unusual opportunities of pursuing this subject. The knowledge so gained has since been extended. With pure ethyl alcohol and pure sulphuric acid it is possible, under certain conditions, to prepare ether free from alcohol and water. This ether, when fractionally distilled, yields about 50 per cent. of distillate at a temperature of 34·5° C., and practically the whole of the remainder comes over between 34·7° C. and 34·8° C. There is only a very small residue left. Pure ether obtained in this way, when freshly prepared, can be given in large quantities to animals without producing anæsthesia—in fact, the preparation exerts an intoxicating action; moreover, even were this pure product of use for producing anæsthesia, its cost would be prohibitive. Having established this point it became obvious that the anæsthetic properties were wholly due to one or other of the compounds contained in ordinary anæsthetic ether. In view of its volatility, and moderate toxicity, pure ether was evidently the best vehicle that could be used for the preparation of an anæsthetic. Attempts were therefore made to purify ordinary ether for this purpose. The problem was somewhat complicated by the fact that during the war ethyl alcohol became very costly, and available only in limited quantities. The only other source was "industrial spirit," consisting of a mixture of ethyl and methyl alcohols; and this became the sole source for the preparation of anæsthetic ethers. It appears now to have superseded ether made from rectified spirit; and from the point of view of cost alone its use is to be recommended.

Impurities Contained in Ether.

Many samples of ether prepared in this way were found to contain not only the three ethers—viz., dimethyl, diethyl, and methyl-ethyl ethers—but, in addition, abundant impurities. There is no doubt that whereas pure ethyl ether undergoes oxidation on standing, it does not do so as readily as the methylated ether. There are, therefore, much larger amounts of impurities in the latter ethers. The chief preformed impurities are alcohol, water, acetone, and mercaptans and thio-ethers. Those formed by oxidation of the ether comprise aldehydes, peroxides, and acids. Carefully prepared samples of ether naturally contain very small quantities of these impurities, but the purer the sample, the more of it is required to produce anæsthesia. It follows, therefore, that if larger quantities are used, the actual amount of impurities administered may be considerable.

Removal of Mercaptans.

The methods usually adopted for purifying ether were systematically investigated, and it was found that most of the impurities were thereby removed. The removal of the chief impurity—viz., mercaptans—proved to be a much more difficult problem. A procedure was ultimately found whereby the mercaptans are completely removed from the ether, and this appears to be the most important part of the process. By distilling ether with very finely divided permanganate it was found that oxidation of the impurities occurred, and if a special reflux condenser was adopted all the mercaptans were retained in the residue. Quantities of ether were treated in this way, and the residues collected. The residue was found to possess an evil odour, and to be extremely poisonous. A mere whiff from the bottle is sufficient to produce a feeling of nausea, and considerable irritation of the naso-pharynx. Inhaling even small quantities of the residue rapidly induces a severe headache. The permanganate in a finely divided form adsorbs this most potent impurity, and thus removes it from the ether. This is evident if one separates the permanganate after distillation, and subjects it to a stream of dry air. The permanganate gives off the mercaptans completely, and may be used over and over again. Iodine also destroys mercaptans, but its use in place of permanganate is inadvisable for many reasons, chief among them being the difficulty of removing traces of iodine which distil over with the ether.

A Pure Ether Finally Obtained.

The ether so treated is quite free from aldehydes and mercaptans, and contains only traces of alcohol, water, and peroxides. To remove these remaining impurities the distilled product is treated with anhydrous copper sulphate. At first I redistilled over the copper sulphate, but ultimately this was found to be unnecessary, mere shaking and standing being quite sufficient. By this process a remarkably pure ether is obtained, which keeps well, and only slowly undergoes oxidation. The ether prepared in this way has been used as a vehicle for the anæsthetic compound.

Importance of Recognising Certain Impurities in Anæsthetic Ether.

The occurrence of impurities in ether can be best studied in such a climate as India, where ether, especially methylated ether, rapidly undergoes change. One batch of ether I tested was so impure that the evaporation of a small quantity in the laboratory was sufficient to make the place untenable. Salivation, lacrymation, and a severe headache followed the inhalation of fumes derived from evaporation of a few cubic centimetres of the sample labelled "anæsthetic ether." The peculiar odour attracted my attention, and inquiry revealed the presence of quantities of methyl and ethyl mercaptan in these samples. These compounds, in my opinion, were responsible for the unpleasant effects produced. My colleague, Dr. Langton Hewer, came up one day in April, 1920, with the residue of a bottle of anæsthetic ether which he had used on two patients, both of whom had stopped breathing soon after administration of the ether. I at once detected the same odour, and found that the chief impurity in this ether was the mercaptans. Many samples of ether were therefore tested, and the great bulk of them showed this impurity in varying quantities. It appeared obvious that such compounds with their irritating properties were of no use, and that it was highly desirable that they should be removed. Their removal was found to be effected by the use of permanganate as described above. The other impurities were easily removed, but in so doing I removed some compound or compounds which were of importance, since the highly purified product was no longer capable of producing anæsthesia.

At this juncture my attention was called to the production of an ether in America by Dr. J. H. Cotton, who used carbon dioxide and ethylene dissolved in ether. In experimenting with the use of carbon dioxide and ethylene I was struck by the differences in the amount of these gases absorbed by various samples of ether. Absolutely pure ether apparently takes up very little carbon dioxide and ethylene. The ether prepared by the process described above was found to behave quite differently. Using good samples of anæsthetic ether it was found that whereas before distillation practically no gases were absorbed, after distillation with permanganate and copper sulphate comparatively large quantities could be absorbed by the ether. This preparation was found to be extremely potent as an anæsthetic, as I had good reason to realise from personal experience.

Properties of the Pure Ether.

The pure ether was practically non-irritating, but possessed a pleasant odour and a rather stimulating effect. It was free from aldehydes, peroxides, acids, and water. When treated with carbon dioxide and ethylene its sweet pleasant odour was intensified. This preparation was made, and after being tried upon animals with success by my colleague, Dr. Philip Hamill, it was resolved to try it on human beings. Dr. Langton Hewer, whose keenness and

courage I much appreciate, set to work and gave this anæsthetic to about 100 cases. All the material was prepared by myself in the laboratory with the standard process which had been evolved. I leave it to him to describe the results he has obtained. In the meantime the peculiar properties of this anæsthetic were further investigated. Ethylene prepared from ethyl alcohol and sulphuric acid possesses a very pleasant odour, but very little anæsthetic power. When prepared by means of phosphoric acid this pleasant odour is not so obvious, and the ethylene so prepared has a much reduced action when dissolved in ether. It was obvious that the carbon dioxide played little, if any, part in producing anæsthesia, since ether and carbon dioxide alone were found to be without action. It, however, exerts a stabilising effect, as pure ether, treated with dry carbon dioxide, does not undergo oxidation so readily as pure ether alone.

The Ketones as Anæsthetic Agents.

The outcome of these investigations was to show that certain ketones in the ether were largely responsible for the anæsthetic properties of the ether. Good anæsthetic ethers, free from aldehydes, mercaptans, &c., when treated with finely divided permanganate, yielded a pleasant-smelling residue instead of the evil-smelling residues previously obtained. This residue proved to contain ketones, and these compounds appeared to be the essential element in the production of a good and safe anæsthetic. The mixture of ketones proved to be very potent, and it was necessary to use a volatile solvent. In view of the readiness with which ordinary ether can be purified, this compound was selected as the solvent. Into this pure ether the mixed ketones were placed in varying proportions, and the mixtures so obtained were found to be capable of producing anæsthesia. The anæsthetic action was enhanced if the mixed ketones were first treated with carbon dioxide and ethylene. The ketones used comprise those in the middle of the series, and a loose chemical combination between these substances and the carbon dioxide and ethylene apparently results. In attempting to purify ether, therefore, the discovery was made of the importance of certain impurities—viz., the ketones. This opens up a wide field for future investigation, and much further work is necessary before it can be said that the ideal general anæsthetic has been obtained. All the material necessary for the application of this mixture as an anæsthetic was made in the laboratory, and supplied as required to my colleague, Dr. Langton Hewer. As soon as its value as an anæsthetic was established, and requests made for trial purposes by other anæsthetists, it became necessary to place its manufacture in other hands. The preparation of this anæsthetic, according to the method described above, has been undertaken by Messrs. Savory and Moore, who have now placed it on the market under the name of "Ethanesal."

PART II.—BY C. LANGTON HEWER.

I will first of all describe the observed effects of this anæsthetic, ethanesal, on the various metabolic processes.

1. *Respiratory System.*—The respiration-rate rises slightly during the induction but not to such a great extent as with ether. When fully anæsthetised the patient's respirations are usually quieter than with ether, and more closely resemble those of chloroform anæsthesia. The irritation of the mucous membrane of the respiratory passages is much less than with ether, as is shown by the ability suddenly to increase the strength of the vapour without causing coughing or spasm. The salivation is considerably less than with ether, and if atropine has been previously given, it is usually almost non-existent.

In 200 cases I have only had one with post-operative bronchitis, and this occurred in a myxœdematous girl who had to be conveyed for about 100 yards in the open air from the theatre. The temperature outside was below freezing-point at the time. On the other hand, the anæsthetic has been given to 10 patients with well-marked bronchitis, as shown by dyspnœa, cough, sputum, and sibili in the chest. None of these cases showed any aggravation of the symptoms, and two of the number appeared to be actually better after operation.

2. *Cardio-Vascular System.*—The effects of this anæsthetic on the blood pressure and pulse-rate are shown on the accompanying graphs. These were obtained by calculating the averages of a number of cases whose operations were of approximately the same severity. The actual pressures could obviously not be given, as the normal for each individual varies between wide limits. Consequently the normal has been taken as that of the patient before operation. This is probably slightly too high, owing to the psychical effect of anticipation, but the error may be neglected as it occurs in all the curves.

As the length of time of the operations varied, there is an interval of more than five minutes between the 25 minutes' time and the end of the operation. Otherwise I think the graphs explain themselves. It will be seen that as regards systolic blood pressure the anæsthetic occupies a position between chloroform and ether. It is specially noticeable that the drop in pressure at the end of the operation, and before the patient is conscious, is less than with ether.

I think that the fairest comparison between the three anæsthetics is afforded by the pulse pressure curves—that is, the difference between the systolic and diastolic pressures. It now appears to be agreed by most authorities that this figure affords a fairly reliable guide as to the condition of the patient, and it will be seen that although it does not rise so high as with ether, yet it is the highest of the three at the end of operation, and afterwards when the patient is conscious.

As regards the action of the anæsthetic on the diseased heart, I have given it to several cases of mitral regurgitation, congenital pulmonary stenosis, and to one case of advanced mitral stenosis with auricular fibrillation, with no ill-effects. I have described this latter case in greater detail below. The anæsthetic has also been given to patients suffering from marked anæmia, from hæmorrhage or other causes. The lowest red blood count was in a man with lymphadenoma, who had 2,100,000 red cells.

3. *Cerebral Processes.*—The three stages of anæsthesia, as described with ether, are observed with this anæsthetic, but can be made to follow one another with greater rapidity owing to the possibility of employing stronger vapour. The excitement stage is usually not so marked as with ether, and if given with gas and oxygen may be entirely absent. It is sometimes possible to procure perfect analgesia without anæsthesia, and if a long extra-abdominal operation is being performed, such as an extensive tendon transplantation, the patient can usually be allowed to become exceedingly light, and may even be blinking his eyes, but will remain quite motionless, breathing quietly, and not feeling pain.

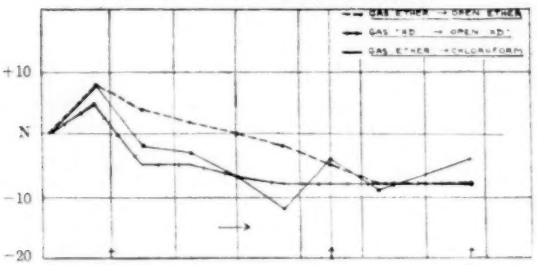
4. *Sugar Metabolism.*—No case of post-anæsthetic acidosis has yet been observed with this anæsthetic. Three patients with well-established diabetes mellitus have been anæsthetised and no ill-effects were noticed. Unfortunately the sugar tolerance of these patients was not accurately estimated beforehand, but there was no appreciable diminution observed afterwards. One child who was passing large quantities of acetone in the urine was given this anæsthetic for half an hour, with no ill-effects.

5. *Effect of the Anæsthetic on Patients with Various Toxæmias.*—Patients acutely ill with various conditions have been anæsthetised. These include neglected perforated gastric and duodenal ulcers, neglected intussusception, toxæmias of pregnancy, &c. Although two of these patients subsequently died of peritonitis, no ill-effects from the anæsthetic were observed; on the other hand, the condition of the patients nearly always improved temporarily when under the anæsthetic.

6. *After-effects:* (*a*) *Vomiting.*—48 per cent. of the patients had no vomiting whatever. 42·6 per cent. retched or vomited once before coming round, but did not remember it, and had no vomiting afterwards. 7·3 per cent. vomited up to one hour after coming round. 2·0 per cent. vomited for over one hour after coming round. No case has had prolonged vomiting extending over one day, with the exception of one thyroidectomy, which developed acute hyperthyroidism after operation.

There is, no doubt, a large mental factor involved in vomiting, and some patients will vomit even after a simple nitrous oxide anæsthesia. Further, in a children's hospital where this new anæsthetic

FIG. 1.—*Diastolic Blood Pressure.*



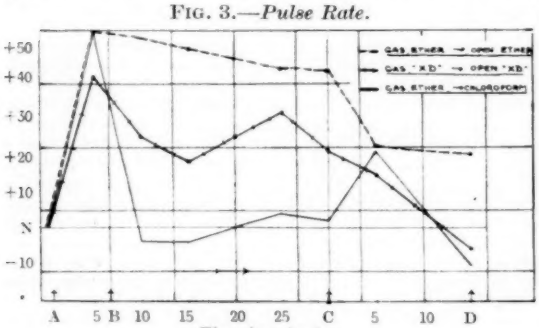
N = normal. A = induction started. B = operation started. C = operation finished. D = patient conscious.

was given, it was found to be quite exceptional for a child to vomit after it was conscious, except in the case of prolonged excision of cervical gland operations where the vagus was disturbed. The sisters of the surgical wards of this hospital were unanimous that the children were, on the average, much fitter after this anæsthetic than after chloroform or ether which had previously been used, and that the vomiting was very much less.

(*b*) *Respiratory Complications.*—None have occurred, with the exception of the one case mentioned above.

(*c*) *Taste and Smell of Anæsthetic.*—These are practically non-existent, and constitute one of the

FIG. 3.—*Pulse Rate.*



Time in minutes.

main advantages of the anæsthetic. Patients who have been previously anæsthetised with ether, and have objected to these after-effects, have invariably experienced surprise at their absence with this anæsthetic.

I have quite lately anæsthetised a doctor, a hospital nurse, and an army officer, who had all previously had ether and complained of continual vomiting (in one case up to a week), and also of the unpleasant taste and smell. All three patients stated that there was no taste or smell on coming round, and none vomited after regaining consciousness.

No other complications attributable to the anæsthetic have been observed.

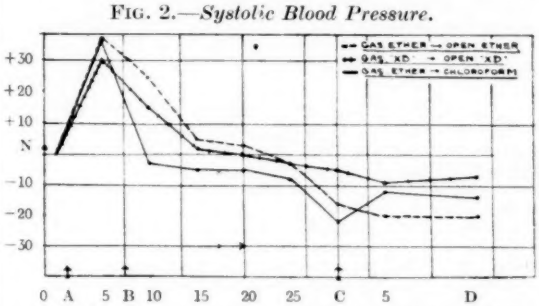
Method of Administration.

I have employed four main methods of administering this anæsthetic.

1. *Induction by a Clover's Inhaler, followed by an Open Mask.*—This method is suitable for most adult cases. Nitrous oxide gas may be used in the induction, but is almost unnecessary, as the vapour of the anæsthetic is not unpleasant to the patient. I have usually changed over to the open method just after the skin incision has been made.

2. *Open Ethyl Chloride Induction, followed by the Anæsthetic on an Open Mask with 20 Layers of Gauze.*—This method is suitable for children up to 13 years old. I first of all put a few drops of tincture of orange on the inside of the gauze mask. When the child has got used to the smell I gradually spray on the ethyl chloride. Directly he is unconscious I change

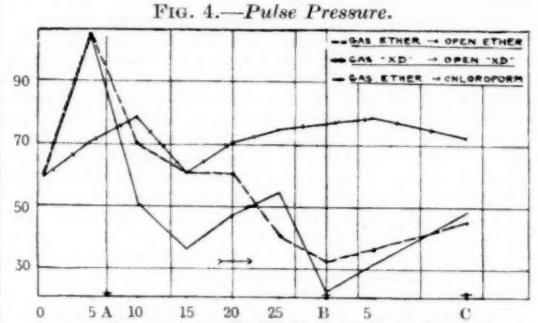
FIG. 2.—*Systolic Blood Pressure.*



over to this anæsthetic and pour it on quite rapidly. This can be done without any coughing or salivation, such as occurs with ether. When completely anæsthetised it will be found that less anæsthetic is usually required than with ether. The time of induction is short by this method, the average being four minutes, until the patient is ready for an incision.

3. *Combined with Nitrous Oxide and Oxygen.*—I have usually given this in a Boyle's machine, with the following modifications: (*a*) The two-way tap on the ether bottle is replaced by a special tap recently described by Mr. H. E. G. Boyle, which allows any percentage of the gases to pass through or over the liquid; (*b*) the bottle containing the anæsthetic is kept standing in a receptacle of warm water in order

FIG. 4.—*Pulse Pressure.*



A = operation started. B = finished. C = patient conscious.

to prevent freezing taking place. Very good relaxation can be obtained with this method, and such operations as cholecystectomy, ileo-sigmoidostomy, and partial colectomy have been done with it. The time of recovery is usually very rapid, and for this reason the anæsthetic should be continued until the last suture has been inserted and tied.

4. *Intra-Tracheal Insufflation.*—I have employed this method for the following classes of operations: (*a*) Extensive thoracotomies, when both pleural cavities may be opened simultaneously; (*b*) operations on the upper abdomen, such as cholecystectomy or gastro-enterostomies, in which it is desirable to limit the respiratory movements as much as possible; (*c*) in operations on the neck where respiratory obstruction is anticipated, such as thyroidectomies, where there is a retrosternal lobe; (*d*) in plastic operations of the face.

I started by using the anæsthetic in the usual way, instead of ether by blowing pure air over it, but I found that better results were obtained by using it with gas and oxygen. I have connected the exit pipe of a Boyle's machine to the intra-tracheal apparatus, and have found that much less anæsthetic is required, and that with this method the patients appeared to be in better condition afterwards.

For all these methods the patients were given an atropine injection. Morphia was not given unless the patient was very excitable or nervous, as in my opinion it tends to mask the useful signs, such as eye reflexes, and is best given just before the patient regains consciousness, as he will then remain analgesic for a longer period.

Analysis of Results.

About 250 cases have been anæsthetised so far [at the time of going to press, this number has increased to 500], and I have detailed reports on the first 200. These were nearly all hospital patients, the majority being at St. Bartholomew's Hospital and the Queen's Hospital, Bethnal Green.

I have divided the quality of anæsthesia into three groups: (A) Anæsthesia very good with no salivation, straining, or any other difficulties whatever. These constitute 91·3 per cent. (B) Anæsthesia satisfactory, but slight difficulty, such as some rigidity or salivation. These cases were 8 per cent. (C) Anæsthesia poor or great difficulty experienced. Only one case comes into this class, which was a child with myxœdema.

In no case has a change had to be made to another anæsthetic. In cases in which the open method has been used the time elapsing between the end of the anæsthetic and consciousness being regained is, on the average, about two-thirds of the length of time that the patient was anæsthetised. If given with gas and oxygen the time is about one-third. The average time of induction for all cases was 4·1 minutes.

The age of the patients varied between eight hours and 70 years, and the time of operation between 5 minutes and 2 hours 45 minutes. The first 100 cases were selected to give as representative a series of operations as possible. The remainder were not selected, being just routine hospital cases.

The operations performed under this anæsthetic include: Amputation through thigh (4 cases), appendicectomy (21 cases), appendicostomy, arthrodesis, astragulectomy, bone plating, cholecystectomy (3 cases), cholecystotomy, colectomy (partial), colostomy, cystoscopy, colopexy, excision of glands, excision of hæmorrhoids, exploration of knee-joint, exploratory laparotomy, gastrectomy (partial), gastro-enterostomy, Halsted's operation on the breast, ileo-sigmoidostomy, nephro-lithotomy, œsophagectomy (partial), osteotomy, radical operation for inguinal, femoral, and umbilical hernia (24 cases), reduction of intussusception, sequestrotomy, skin graft, sigmoidoscopy, submucous resection of nasal septum, suprapubic cystotomy, suture of perforated gastric ulcer, tarsectomy, tendon transplantation, thoracotomy, thyroidectomy (8 cases), thyroid graft, tonsillectomy, wiring of fractured patella.

None of the above cases gave rise to any anxiety during anæsthesia, with the exception of a long gastrectomy on a woman in very poor condition. At the end of two hours she became collapsed from loss of blood, but a blood transfusion was performed, and she greatly improved. This case made an uninterrupted recovery.

For the long abdominal cases in this list I have always adopted the method of getting the patients deep at the start, and then when the abdomen is opened and the anastomosis or other manipulations are being performed, of allowing them to become quite light, again giving more anæsthetic when the abdomen is being closed. The patients are in better condition at the end of operation, and much less anæsthetic is used than if a uniform depth of anæsthesia is maintained throughout.

Detailed Cases.

I will now describe some of the more striking cases in greater detail:—

CASE 4. Female, aged 69, suffering from severe chronic bronchitis, was very stout, and had a large umbilical hernia which was giving her trouble as it became semi-strangulated. She was given the anæsthetic combined with gas and oxygen. The operation lasted just an hour. Relaxation was good, and the patient recovered consciousness five minutes after cessation of the anæsthetic. The bronchitis was not apparently increased and she made a good recovery.

CASE 5. Male, aged 60, suffering from a perforated gastric ulcer. The diagnosis had not been made for some days: when seen he was practically moribund, and the radial pulse was not palpable. It was decided, however, that a laparotomy was justifiable to give him a chance. He was anæsthetised with gas and oxygen and this anæsthetic; breathing and colour considerably improved; a flicker was detected in the radial artery. The operation lasted 20 minutes during which time a solution of gum saline was infused intravenously. He recovered consciousness 20 minutes afterwards and lived for 24 hours, finally dying from peritonitis.

CASE 7. Male, aged 43, suffering from carcinoma of the colon, was given the anæsthetic combined with gas and oxygen, and a nearly complete colectomy and anastomosis was performed. The operation lasted 1 hour 25 minutes, and the patient was somewhat collapsed from loss of blood. A saline was given per rectum and he rapidly improved. He was conscious 20 minutes from the end of the operation, and had no vomiting or other after-effects from the anæsthetic.

CASE 25. Male, aged 14, had bilateral acute mastoiditis; was very ill, temperature 104°F., pulse 110, respirations 35; signs at both pulmonary bases. Was induced with the anæsthetic in a Clover's inhaler, and then on an open mask. Both mastoid antra were opened up: the operation was very difficult lasting 2 hours 10 minutes. The patient regained consciousness one hour after the operation, slept all night, and awoke next morning feeling quite fit and read a newspaper. No vomiting or after-effects; signs at bases of lungs rapidly cleared up, and the temperature, pulse, and respiration soon fell to normal.

CASE 28. Male, aged 61, a diabetic, passing large quantities of glucose and acetone bodies in his urine. Gangrene of foot and very calcareous arteries: the femoral distinctly visible throughout its course in the skiagram. Anæsthetised with the liquid first in a Clover's inhaler and then on an open mask. The femoral artery was first ligatured, and the amputation then made through the thigh. The operation lasted 45 minutes. Half an hour afterwards patient had regained consciousness, was not sick, and felt very fit. He had no after-effects whatever.

CASE 34. Female, aged 44; ulcer in œsophagus thought to be carcinomatous. Intratracheal anæsthetic given, and portion of œsophagus containing ulcer excised through an incision in the neck; operation lasted 1 hour 55 minutes, and beyond one vomit of blood, which had trickled down into the stomach, the patient had no after-effects from the anæsthetic.

CASE 54. Female, aged 45, admitted to hospital with heart failure. When improving slightly cholecystitis developed and became worse in spite of treatment. It was therefore decided to operate. Patient then had auricular fibrillation, evidenced by grossly irregular pulse, dyspnœa, and some cyanosis. I gave her the anæsthetic combined with gas and oxygen, which she took very well and was completely relaxed. A cholecystectomy was rapidly performed, the operation lasting 25 minutes. The patient made a very good recovery and her heart was apparently in exactly the same condition as before operation.

CASE 118. Army officer, wounded in leg, who had had many previous operations under ether. Each time he had been very upset by the anæsthetic, had vomited for some days, and complained greatly of the taste and smell. I induced him with this anæsthetic in a Clover's inhaler, and continued by the open method. The operation lasted half an hour. As he was coming round and before he was conscious he retched and brought up some mucus. Soon after he regained consciousness he had tea and felt very fit. He had no vomiting and said he could not taste or smell anything, and expressing great surprise that this was so.

CASE 143. Male, aged 60, brought to hospital with acute cholecystitis; in a very bad condition, pulse 140, respirations 38. Much bronchitis; apex beat in sixth space well outside nipple line; also passing large quantities of sugar. Operation was imperative and it was decided to give this anæsthetic combined with gas and oxygen. He took it very well; on opening the abdomen an empyema of the gall-bladder was found: the operation lasted for three-quarters of an hour, patient regained consciousness

in seven minutes, and did not vomit or suffer from any after-effects. The bronchitis was not increased, and he made a good recovery.

CASE 177. Female, aged 32, who had previously had a gastro-enterostomy for gastric ulcer; as the trouble recurred it was decided to do a gastrectomy. She was anæsthetised with this anæsthetic combined with gas and oxygen, and good relaxation was obtained; operation very difficult owing to adhesions from the previous gastro-enterostomy, and lasted 2 hours 40 minutes. At the end of two hours she was becoming slightly collapsed and a gum saline infusion was given intravenously. Her condition then greatly improved, and remained good until end of the operation. After recovering consciousness the patient vomited four times, the material being blood in each case. She had no further vomiting and made a good recovery.

Summary.

To recapitulate the advantages claimed for this anæsthetic:—

1. It is less toxic than chloroform or ether, and the safety margin is greater than with either.
2. It is less irritating to the respiratory passages than ether, and consequently there is less risk of subsequent bronchitis and pneumonia; the induction of anæsthesia is also rendered easier.
3. Post-anæsthetic vomiting is less than with chloroform or ether.
4. The taste and smell noticed afterwards by the patient are very much less than with ether, and are generally entirely absent.

In conclusion I should like to express my thanks to those surgeons who have afforded me opportunities for taking blood-pressure readings, and to Mr. B. B. Sharp, late resident anæsthetist to St. Bartholomew's Hospital, for his help in taking the readings.

CHAULMOOGRA OIL IN LEPROSY AND TUBERCULOSIS.

THE SUCCESSFUL TREATMENT OF LEPROSY BY INJECTIONS OF SOLUBLE PREPARATIONS OF THE FATTY ACIDS OF CHAULMOOGRA AND OTHER OILS AND ITS BEARING ON THE TUBERCULOSIS PROBLEM.[1]

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ALTHOUGH the disease of leprosy is mainly of historical interest in this country, it presents an important and difficult problem in the tropics, especially in India and China; so a method of treatment which brings about destruction of the leprosy bacilli in the tissues is thus of great interest apart from its possible bearing on tuberculosis. Chaulmoogra oil has long been the best known remedy for the disease, but, owing to the nausea produced by large doses, it has only an ameliorative effect in typical cases, although Hopkins of Louisiana obtained some apparent cures in incipient cases by persevering with use of the oil. In 1913 Heiser reported apparent cures of a few cases by the prolonged use of chaulmoogra oil intramuscularly, which was a distinct advance. Power and others had obtained chaulmoogric and hydnocarpic acids from chaulmoogra oil and from hydnocarpus oils, while the name of gynocardic acid had been given by Moses to a mixture of the lower melting-point acids of chaulmoogra oil.

Use of Gynocardic Acid.

I myself early used gynocardic acid orally in the place of chaulmoogra oil with promising results, one severe case having nearly cleared up on very large doses in the course of a year, and in 1912 I attempted unsuccessfully to obtain a soluble compound of it for injection; returning to the subject in 1915, after Heiser's results had been published, I began giving subcutaneous injections of sodium gynocardate, which resulted in more rapid improvement than that following the oral use of gynocardic acid. These injections, however, were rather painful and slow in their action, so I next used sodium gynocardate intravenously in small doses, which were painless, being followed in some cases with much thickening of the tissues, indicating the presence of very large numbers of acid-fast bacilli, by febrile reactions accompanied by swelling up and softening, with subsequent more rapid absorption of the lesions. Microscopical examinations in such cases showed large numbers of red dots of disintegrated bacilli with but few remaining rods, proving that the reactions resulted in rapid destruction of the bacilli in the tissues. Repeated microscopical examinations of cases not showing febrile reactions demonstrated that a similar more gradual breaking-up and absorption of bacilli occurred under the new treatment, until the lesions became bacteriologically negative.

Occasionally, in advanced cases of the disease, more severe reactions with prolonged fever occurred, followed as a rule by great improvement. Two remarkable cases were noted, in one of which extensive lesions of 20 years' duration with ulceration almost completely cleared up, with healing of all ulcers, during a period of about a year following a single small intravenous injection with prolonged febrile reaction; whilst in the other case very extensive lesions on the face and body completely disappeared, becoming bacteriologically negative after a similar reaction, although no further injections were given—a fact indicating that the extensive breaking-up of the bacilli during such reactions had led to curative formation of antigens in the body. Such reactions took place only after intravenous, and not after subcutaneous, injections of sodium gynocardate; the improvement was also much more rapid and satisfactory under the former method of administration, although it had the drawback that irritation of the vein at the site of injection sometimes caused strictly local obliterative phlebitis, producing difficulty in continuing the intravenous injections in certain patients.

Activity of Hydnocarpic Acid.

The next step in the investigation was to separate different melting-point unsaturated fatty acids of chaulmoogra oil by fractionation, and to test their sodium salts or soaps in cases of leprosy, to ascertain which were most active in the disease. As the result of prolonged observations it was found that the lower melting-point preparations, consisting mainly of gynocardate of soda, were less active than those made from fractions with melting-points of about that of hydnocarpic acid—namely, 58° C.; but that chaulmoogric acid, with a melting point of 68° C., formed sodium salts too insoluble for injection alone; the latter could be used in combination with sodium gynocardate, but without presenting any advantages. The conclusion was, therefore, arrived at that hydnocarpic acid was probably the most active constituent of the oil; it can be obtained more readily and in large quantities from hydnocarpus oils than from true chaulmoogra oil derived from the seeds of the Indian tree, *Taraxtogenos kurzii*. Later observations, however, have shown that active preparations can be made without laborious fractionation, from the whole of the fatty acids of these oils, which will simplify the production of the soluble active portions of the oil for the new injection method of treating leprosy.

Use of Sodium Morrhuate in Tuberculosis.

The successful treatment of leprosy by soluble derivatives of chaulmoogra oil led me to consider the trial of a similar line of treatment in tuberculosis, due to the other important human acid-fast bacillus, but the induration, pain, and slow effects of subcutaneous injections of gynocardates, and the severe febrile reactions sometimes produced by their intravenous injections, which might conceivably lead to a generalised infection made me hesitate to use

[1] An abstract of a paper read before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, April 19th, 1921.

that preparation in tuberculosis, so I made a similar sodium salt of the unsaturated fatty acids of cod-liver oil, which I called sodium morrhuate, and first tested it in leprosy cases which had become stationary on gynocardates, or in which the latter could not be given intravenously for any reason. The preparation proved to be non-toxic, very soluble and unirritating to the tissues or veins, so was much easier to administer than the gynocardates and hydnocarpates; it soon became evident that leprosy patients who had ceased to improve on gynocardates might once more progress and completely clear up under sodium morrhuate. Moreover, even advanced cases treated by simple and almost painless subcutaneous injections of sodium morrhuate might recover completely; the very important fact was established that other oils besides chaulmoogra and hydnocarpus may be effective in leprosy.

Testing of Other Oils.

A wide field of investigation was thus opened up and explored; oils with a high iodine value, indicating a large content of unsaturated fatty acids, were selected for testing. One made from linseed oil proved to be irritating to the tissues, while another derived from Japanese sardine oil was very toxic to animals, but a third preparation made from soya bean oil, which is an excellent food largely used in China, was found to be very suitable for injection purposes. In a short trial before the author left India, a severe case, with a very extensive lesion on the face, cleared up and became bacteriologically negative within the exceptionally short time of six weeks; proving that yet another oil may yield active products, although further cases did not clear up so rapidly. These several preparations may be advantageously used alternately or mixed together, a change being made if progress is not satisfactory under one of them.

Duration of Treatment.

The duration of treatment required to obtain complete clearing up of typical leprosy cases is considerable, a year or more often being necessary, although comparatively early cases may show apparent recovery in a shorter time. The results of five years' investigation were summarised at the Calcutta Leprosy Conference in February, 1920, when of 51 cases treated with sodium gynocardate and hydnocarpate, 1 was not improved, 9 slightly improved, 20 greatly improved, and in 21 the lesions had completely disappeared, all cases treated as long as three months being included. Thus, 80 per cent. showed either great improvement—with a good prospect of complete clearing up after further treatment—or had already become bacteriologically negative. If cases treated for a year or longer were considered alone, 9 out of 13, or 65 per cent., showed complete disappearance of the lesions. Of 20 further cases treated with sodium morrhuate, 3 were slightly improved, 12 greatly improved, and in 5 the lesions had disappeared, none of the cases having been treated for over one year: 85 per cent. were thus classed as greatly improved, or "lesions disappeared."

After-Results.

The after-results were next discussed in the light of 26 gynocardate and 8 morrhuate cases, which had been followed up for another year subsequent to an earlier report on their condition. Of the former class, 5 had shown further improvement, in 5 the lesions had disappeared, and 10 remained well, bringing the latter class up to 65 per cent.; 5 had relapsed—all patients who had discontinued the treatment against advice as soon as their visible lesions had disappeared, although some of them subsequently cleared up again under further treatment. Stress was laid on the importance of relapses in emphasising the necessity for prolonged treatment and justifying the caution of the author in not speaking of cures. Still, four cases had remained well for two and a half years, and six more for over one year; in certain of these cases an additional year can now be added, so that some may eventually prove to be cured. Confirmatory results reported by a number of observers were quoted, the most important being a trial in 13 Indian leper asylums of hydnocarpates in 183 and morrhuate in 117 cases reported on by Dr. E. Muir (who is now carrying out much more extensive trials in connexion with the Calcutta School of Tropical Medicine) with improvement in 72 per cent. and great improvement in 32 per cent. The trials were only of from two to 12 months' duration in most of these cases; while of those treated for six months and over, 100 per cent. showed improvement and 52 per cent. great improvement, including disappearance of the lesions in some cases. Moreover, sodium morrhuate gave exactly the same results as hydnocarpate of soda. Dr. M. Carthew, in 14 cases followed up in a Siam jail, also reported 2 improved, 8 greatly improved, and 4 with lesions disappeared for from six to 18 months. Ethyl ester chaulmoogrates and morrhuates were also made, but the former was rather painful on injection, although it has the advantage that it can be given subcutaneously or intramuscularly; in the Sandwich Islands, Hollmann and Dean, in 1919, and McDonald, in 1920, have reported very good results from its use, 78 patients having been discharged on parole by a medical board by the latter date. Moreover, patients were voluntarily seeking admission to the leper hospital for treatment, which should help in the segregation of early cases. There is thus no doubt that a great advance has been made in the treatment of leprosy by the researches in Calcutta and those of more recent date in Honolulu.

Age and Susceptibility to Leprosy.

Figures were next adduced to show that there is an especial susceptibility to infection by leprosy during the first two decades of life as compared with later decades. Denny, in the Philippines, has shown that no less than 44 per cent. of children living for seven to ten years with leper parents became infected, and that no less than 73 per cent. of cases in which the source of infection was traced, were among children and young adults, as compared with 1 to 2 per cent. between husband and wife in later decades of life. The frequent infection of children with tuberculosis is closely parallel, and attention was drawn to a recently published report showing the success of the Grancher Institute in Paris, which by permanent removal of children from exposure in overcrowded families containing adults with open tuberculous lesions, has greatly lessened infection among children. The great value of such protection of early life against infection of both leprosy and tuberculosis was emphasised.

Variable Results in Tuberculosis.

The trial of sodium morrhuate and sodium gynocardate in tuberculosis was next dealt with, the use of the former by six medical men in India having been reported in 1919, when the author concluded that the treatment was harmless and worthy of further trial, in view of five out of the six observers having reported favourably. Since that time variable results have been recorded, a trial among Indian sepoys in the dry, cool climate of Quetta having been very favourable, as well as the use of sodium morrhuate in tuberculous gland cases and in four cases of lupus, in one of which a new preparation, mercury morrhuate, was applied locally. On the other hand, trials in America had not given favourable results in phthisis. Attention was next drawn to the remarkable experimental investigation of gynocardates and morrhuates on acid-fast bacilli by Walker and Sweeny, who found that the chaulmoogra-oil preparations were lethal to acid-fast bacilli as a class on long exposure to their action in fluid media in dilutions of 100,000, having an especial selective action on them, although not on other classes of bacilli; they suggested that in leprosy these soluble preparations of chaulmoogra oil might have a direct destructive effect on the leprosy bacillus. On the other hand, sodium morrhuate had no such action on acid-

fast bacilli, and I wish to point out that the interesting American observations do not explain the undoubted value of sodium morrhuate in leprosy; and that some chemical reaction with the fatty envelopes of the acid-fast bacilli, so weakening them as to allow the body cells to deal with them, best accounts for their destruction in the body under the action of my preparations; but much more research is required in the wide field now opened up.

Conclusion.

A recent experimental investigation has been made of the three new preparations, which had proved effective in the treatment of leprosy, in animals infected with tuberculosis; but in the acute general tuberculosis produced in the very susceptible animals used the results were entirely negative, except for an early febrile reaction followed by temporary fall of temperature, in two goats, who eventually succumbed to the infection at about the same time as a control animal. It was pointed out that these animal infections were equivalent to acute general tuberculosis in man, so that the failure in such cases did not prove the drugs to be useless in the more chronic forms of tuberculosis which form the great majority of human cases. I conclude that, whilst there is doubt at present as to the advisability of treating pulmonary tuberculosis with sodium morrhuate, except in the hands of experts with control cases, these drugs are worthy of further trial in the more chronic forms of the disease, and especially in lupus and surgical tuberculosis, where any changes will be visible and easily observed.

A CASE OF
JAUNDICE FROM LATE SALVARSAN POISONING.

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IN September, 1918, I was asked by a colleague to see a patient who was suffering from locomotor ataxia with severe root pains; he had previously had two intravenous injections of salvarsan with inunction of mercury administered. The second injection was followed by violent vomiting and purging and alarming general symptoms. At that time I was in the habit of administering novarsenobillon by the "deep subcutaneous" method into the fascia covering the gluteus medius. As I had seen no untoward effects from this procedure I concluded that the slower rate of absorption of the drug made for comparative safety. Accordingly I administered 0·45 g. by this method dissolved in a few minims of distilled water. It caused no pain and he went to business the same day and also on the next day. On the evening of this day, however, he was taken ill with vomiting and purging, the stools containing blood. The illness lasted two days. As the injections gave him great relief from the lightning pains I decided to repeat them, guarding (if possible) against after-effects by the administration of adrenalin chloride (1 in 1000) ℥ 25 in water twice daily, with intermediate doses of calcium lactate, gr. 20, commencing on the day of injection and continuing for three days. This procedure was completely successful; the injections caused practically no pain (no doubt due to the diminished deep sensibility from tabes), and he suffered neither discomfort nor malaise but continued his work uninterruptedly. Since that time I have given him several prolonged courses of novarsenobillon and inunction of mercury ointment, always with the accompanying medicinal treatment as above, and with marked benefit to his condition.

In the course of the three years during which I have been connected with the venereal clinic at the Chester Royal Infirmary I had seen no case which gave me the slightest anxiety from after-effects, with the exception of one very severe case of acute dermatitis, which came to us after treatment at another clinic, and the case of jaundice which I am about to describe—and this in spite of the fact that many of the patients live in the mountainous districts of Flintshire and Denbighshire, and have to travel to their homes after receiving an injection. I make it a rule never to give an injection if the patient is not in good health, from any cause other than his specific complaint. The urine is tested before each treatment, and all patients undergoing a course of salvarsan and mercury treatment take a teaspoonful of sublimed sulphur in treacle or syrup at bedtime to assist in the elimination of the mercury and thus also, indirectly, of the organic arsenic compound. They are also encouraged to drink freely of simple diuretics such as barley water or whey. I had seen no case of jaundice from delayed salvarsan poisoning, but decided that I would treat such a case with intravenous injections of normal saline (which I had found efficacious some years ago in treating a case of acute yellow atrophy), and also with adrenalin and calcium, after my experience of the effect of these drugs in the case of tabes mentioned above.

On Jan. 22nd of this year a patient attended the clinic with the following history:—

A man, aged 39, employed on a farm. Rheumatic fever in 1913; laid up 12 weeks. Joined army February, 1918; served in the R.E. in Kent; never abroad. Had a venereal sore when he joined army; slight rash on the arms, no sore-throat; had no treatment.

1919.—Glands in the neck enlarged; discharged from army on this account. May to September, 1919, in Chester Royal Infirmary. Lymphadenoma diagnosed; treated with arsenic and X rays; no improvement. July 21st, 1919, Wassermann test positive +; treatment, potass. iodid. and mercury ointment inunction; lost sight of until March, 1920, when he appeared at the venereal clinic. March 20th, 0·45 g. novarsenobillon intravenously, inunction; 27th, not well, injection omitted. April 3rd, 0·45 g.; 10th, omitted. 17th, 0·6 g.; 24th, 0·6 g.; May 8th, 0·6 g.; not well after the injections; these omitted until June 5th, 0·45 g. June 12th, 0·45 g. Injections discontinued again; 24th, Wassermann positive + +. July 28th, 0·45 g. August 4th, 0·45 g. August 11th, 0·6 g. and hyd. 1 gr. intramuscularly. 18th, 0·6 g. Sept. 1st, 0·6 g. and hyd. 1 gr. 8th, 0·6 g., hyd. 1 gr. 25th, 0·6 g. and hyd. 1 gr. Oct. 2nd, 0·6 g., hyd. 1 gr. 9th, not well. 16th, 0·6 g. 23rd, Wassermann positive + +. Nov. 20th, 0·45 g., hyd. 1 gr. 27th, 0·6 g., hyd. 1 gr. Continued to attend at the clinic, but felt unwell.

He always felt ill after the injections; shivering, giddiness, sometimes sickness, feeling of prostration and distaste for food. The specific treatment was entirely discontinued and tonics were administered from time to time. It is noteworthy that intramuscular injections had the same effect as those given intravenously.

Jan. 22nd, 1921: Came to the clinic complaining that he had been vomiting after everything he took; had noticed that he was yellow. Pain coming and going in the stomach; urine had been a deep colour. At once admitted as an in-patient; put on low, fat-free diet; sulphur, a teaspoonful at bedtime, and barley water ad lib. Did not vomit during the first two days in hospital. 24th: 4.30 P.M., one pint of normal saline given intravenously. 6 P.M., severe rigor, patient faint and collapsed; 6.30 P.M., hæmatemesis, about 5 oz. bright blood vomited; diarrhœa; severe pain in epigastrium and under right ribs, shooting to back and up right side. Temp. 103·4° F., pulse 128. 9 P.M., I saw him at the infirmary; deeply jaundiced, pulse 140; collapsed and feeling very ill; right upper rectus abdominis rigid; tenderness in epigastrium and over gall-bladder region. Gall-bladder could be felt distended; spleen not felt; liver dullness normal. (I formed the opinion that the gall-bladder was distended with blood.) Ordered liq. adrenalin chlorid. ♏ 25, and calcii chlorid. 10 gr., in alternate doses 4 tis. 25th: Much better, no further vomiting or diarrhœa; pain not so severe; 20 oz. of dark-coloured urine had been passed during the preceding 24 hours. Fæces clay-coloured. 26th: 10 oz. normal saline, given intravenously; slight shiver followed and temperature rose to 99°. Gall-bladder diminished in size, liver and spleen normal, less pain. (The distilled water used in preparation of the normal saline was not above suspicion, so I had it doubly distilled, and no further ill-effects followed the injections.) Saline administered per rectum in addition to the intravenous. 27th: 10 oz. saline intravenously; the same quantity per rectum;

amount of urine increasing; 40 oz. passed. Herpes on upper lip; pain still on and off. 28th: saline as before, pulse 62. Jaundice unaltered; patient felt drowsy. Gall-bladder still palpable; urine gave iodine reaction for bile pigment for first time. No albumin at any time; urine 30 oz.; no leucin or tyrosin. 29th: vomited; no blood. Still drowsy; jaundice decreasing. On the 30th all treatment was intermitted for one day; on the 31st saline (one pint) was given intravenously; half pint per rectum, followed by increased excretion of urine: 40, 57, 45 oz. on succeeding days.

Adrenalin and calcium stopped on Feb. 1st. Jaundice gradually disappeared, drowsiness diminished, urine and fæces became normal, and patient completely recovered. Nothing could be felt of liver, gall-bladder, or spleen. I may mention that the enlarged glands in the neck, which had begun to decrease in 1919, had disappeared when he returned to the clinic in 1920. Wassermann test, March 22nd, 1921, positive + +. I was somewhat disappointed to find that the severe experience through which he had passed had left the blood reaction unaltered. In the face of such a marked positive reaction as this it would be wrong entirely to discontinue active specific treatment, and I propose to order thorough treatment by inunction of mercury, combined with the dose of sulphur each day, send him into the country for a month to re-establish his general health, and then admit him to hospital for a complete course of salvarsan and mercury treatment under observation, guarded by the adrenalin and calcium dosage as in the case of tabes recorded above. Under these circumstances it will be possible to keep under observation the effect of the injections and the efficient working of the kidneys.

Remarks.

There can be no doubt that this was a case of late jaundice from salvarsan poisoning, the interval between the last injection and the onset of symptoms having been about 42 days. The symptoms are identical with those recently recorded in similar cases by Major A. T. Todd.[1] I have seen no record, however, of a distended gall-bladder such as existed in this case, my surmise that the distension was caused by effused blood, with blocking of the cystic duct by clot, being probably correct. Had I carried out my original intention of commencing the treatment with adrenalin and calcium the alarming collapse of the evening of Jan. 24th would almost certainly have been avoided. The hæmorrhagic symptoms showed that the effect of arsenic on the capillaries, and probably also on the blood, had been reinforced by the dilution of the blood with the normal saline injected. My confidence that administration of adrenalin and calcium would render the subsequent intravenous use of saline a safe procedure was abundantly justified by the further course of the case. The diuretic effect of the saline was very evident, and there can be no doubt that it assisted materially in the elimination of the poisonous toxins. A marked feature of the case was the reaction which followed each injection of salvarsan, and the feeling of malaise and illness which induced us to intermit the treatment from time to time, and, fortunately, to discontinue it between Nov. 27th and the onset of the acute illness in January.

Major Todd,[2] from estimation of the ratio between ammonia nitrogen and urea nitrogen, concludes that "at some time during the acute stage of the illness acidosis was determined in 80 per cent. of the cases, and was present in all but the slight cases." No estimation of the urinary nitrogen was made in my case; the symptoms, however, do not seem to me to be similar to those caused by acidosis as we are familiar with it in uræmia and diabetic coma, there being no such disturbance of respiration. I am strongly of opinion that the grave symptoms are caused by the toxins set free by the destruction of the liver cells, and that, in the main, treatment should be directed towards their elimination. The intravenous administration of saline not only assists this object but also dilutes the toxins in the blood.

One of the most efficient and simple diuretics in my opinion is whey, and its use during a course of salvarsan and mercury treatment would, I think, be beneficial. The late Dr. Samuel J. Gee drew attention to its use in cases of stone in the kidney, and I have frequently had opportunities of verifying his observations.

In conclusion, I wish to thank Dr. W. J. A. Russell, house physician at the Chester Royal Infirmary, for the careful notes which he took of the case.

[1] THE LANCET, 1921, i., 632.
[2] Loc cit.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PULSATING EMPYEMA.

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THIS condition is so rare that I think the following case worthy of record.

M. S., aged 9, was admitted to St. Mary's Hospital on March 6th, 1921, on account of pulsating swelling in the præcordial area.

History.—She was well and attending school till Jan. 20th, when she had her tonsils removed at a local hospital. On her return home there was pyrexia, and she was kept in bed and attended by a doctor. A pulsating swelling was noticed on March 5th, and she was sent into hospital. No history of pneumonia was obtained.

Condition on admission.—Child looks very ill. Temperature 102° F., pulse 140, respirations 40. A pulsating swelling is seen in the præcordial area about 2 inches in diameter; its upper margin is at the left nipple, the lower at the sixth rib, its outer margin ¾ inch beyond vertical nipple line, the inner margin just at the left border of the sternum. The swelling projects about ¾ inch from the chest and pulsates forcibly and synchronously with the heart. The apex beat of the heart cannot be felt, but the heart is not displaced to the right as the area of cardiac dullness does not extend beyond the mid-sternal line.

Lungs.—The whole of the left side of the chest is dull back and front. There is well-marked bronchial breathing back and front over the whole of the dull area, most intense over the upper lobe in front, where a few sharp crepitations are heard.

A diagnosis of pulsating empyema was made. An exploring needle was inserted below the angle of the scapula and pus withdrawn. An aspirator was then used, but only about 3 oz. of pus could be withdrawn as the child complained of great pain. The next day, the 7th, Mr. V. W. Low removed a piece of the eighth rib below the angle of the scapula and evacuated a small empyema, only about 4 oz. of pus escaping. The abscess cavity was small, and on its inner aspect the heart could be felt pulsating. The evacuation of this empyema had no effect on the pulsating swelling in the præcordial area. The next day the temperature fell to 99°, and the child seemed better, but there was still absolute dullness over the upper part of the left lung, with intense bronchial breathing and a few sharp crepitations. On the 12th, as the pulsating swelling still persisted, Mr. Low incised it and about 3 oz. of pus escaped. It was found to be an empyema pointing through the fifth intercostal space and encapsuled between the heart and chest wall. At the bottom of the wound the heart could be seen pulsating violently. This cavity was entirely shut off by firm adhesions from the abscess cavity of the empyema previously opened. A small rubber drain was put into the cavity, and was discontinued after three days as there was little discharge. The temperature after a few days settled down. The upper lobe of the left lung above the empyema became less dull and gradually expanded and the bronchial breathing was no longer heard. Both wounds healed rapidly and the child made an excellent recovery and was discharged from hospital April 22nd.

Dr. Joseph Sailer[1] in 1904 published a paper on "Pulsation of the Wall of the Thorax," in which he states that he has collected records of 97 cases in which effusion of fluid in the pleural cavity was associated with pulsation of the thoracic wall. He divides these into two main groups: (1) General diffuse pulsation

[1] Sailer: Journal of American Science, vol. cxxviii., 225.

of the wall of the thorax; (2) localised pulsating tumours. These he classified as follows:—

Pointing empyemata	34	Localised pulsation.
Pyopneumothorax	4	
Diffuse general pulsation of thoracic wall	25	Diffuse pulsation.
Pyopneumothorax	8	
Circumscribed encapsuled empyemata	5	
Extrapleural abscess	5	
Serous or hæmorrhagic effusion	12	

In 53 cases of left-sided effusions the heart was displaced to the right.

In 58 out of 62 cases when locality of pulsation was mentioned it was on the left side.

Of the 97 cases 37 recovered, 27 died, and 16 improved; the history of the others was not known.

Explanation of Local Pulsation.

As Sailer states, it is clear (1) that the source of pulsation must be the heart, (2) that the pulsations must be transmitted through the collection of fluid to the surface.

Normally the pulsations of the heart are absorbed by the lung, and even if one side of the chest is full of fluid the pulsations of the heart are absorbed by the other lung, which is resilient, and are not transmitted through the fluid.

For pulsation to be transmitted through the fluid to the chest wall two factors appear to be essential: (1) The fluid must be shut off by adhesions and brought into close contact with the heart under a certain degree of tension; and (2) the heart and pericardium must also be fixed by adhesions, and thus kept in apposition with the fluid under tension.

In the case under consideration these conditions were fulfilled, as there was an empyema shut in between the heart and the chest wall pointing to the fifth intercostal space and pulsating, and the heart was fixed by adhesions, as it was not pushed over to the right in spite of the fact that there was another separate empyema at the left base. It is remarkable that the pericardium, being in such close contact with two purulent effusions, should not have been infected.

A CASE OF
WEBBING OF THE LEFT ARM.

By J. S. MANSON, M.D.EDIN., D.P.H.,
MEDICAL OFFICER OF HEALTH, RUNCORN RURAL DISTRICT.

THIS rare condition is illustrated by the accompanying photograph. The skin fold on the left side extends from the nipple to the internal condyle of the humerus. The depth of the anterior axillary fold measured from the acromion process is 8½ inches compared to 5 inches on the right side. The left

humerus is 1 inch shorter than the right. The left pectoralis major is very poorly developed if not altogether absent. The pectoralis minor is also small. The scapular muscles seem less in size than those on the right, but are otherwise well developed. The arm cannot be raised quite to the level of the shoulder. The left side of the chest bulges in front at the junction of the costal cartilages with the ribs. There are no other abnormalities.

Warrington.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

ARTIFICIAL PNEUMOTHORAX.

A MEETING of this Section of the Royal Society of Medicine was held on May 24th, Dr. A. F. VOELCKER, the President, being in the chair, when Dr. CLIVE RIVIERE opened a discussion on Artificial Pneumothorax. Pneumothorax treatment of pulmonary tuberculosis, he said, had now been practised for over 30 years and its value was more and more widely recognised. The treatment was indicated, according to Forlanini, its most notable exponent, "every time that life is threatened by the extension of a local lesion." To achieve success with it, it was necessary to follow very closely its indications and contra-indications, the most important being concerned with the condition of the opposite or "better" lung. Disease in this might be fairly widespread, but must not be of decided activity. The condition of this lung could only be gauged after the deep parts had been revealed to X-ray examination. Râles on the "better" side were often conducted from the bad side, and would disappear when the bad lung was collapsed—care must be taken that this conduction did lead to error and the refusal of suitable cases. Refills of gas must not be too large, and hence must not be at too long intervals. 1000 c.cm. or more, often given in this country, were too large; 700–800 c.cm. should be the limit, and 500 c.cm. were safer. The intervals would be governed by the rate of absorption and vary considerably for different cases—no "standard" interval could be laid down. With the course of time a pleural sclerosis occurred and the gas pressure had to be raised or the lung would expand. This necessitated X-ray examinations at intervals during the course of a case. On the other hand, too high pressures would lead to mediastinal over-displacement, accompanied by unpleasant symptoms. A condition which tended to the undue raising of intrapleural pressure was the onset of pleurisy—very small quantities of gas raised the pressure very high. But no such gas should be introduced, nor the chest punctured till the acute stage was past.

The surgical treatment of adhesions preventing efficient collapse of the lung was an important line of progress. If few they might be divided, without opening the chest, by galvanocautery or tenotome. If more numerous the chest might be opened without rib resection and the adhesions divided. Separation of widely adherent lung had also been tried, but was not a hopeful operation. More hopeful, under such conditions, was a stripping of the costal pleura, and the packing of the space with fat or paraffin, or in some cases, the establishment of a pneumothorax between the costal pleura and the endothoracic fascia. There remained also extrapleural thoracoplasty, but for all these operations the case must be very carefully picked, particularly with relation to the condition of the "better" lung. The point to be specially insisted on in the treatment of pulmonary tuberculosis by pneumothorax or by surgery was the narrowness of the indications, but the striking hopefulness of the treatment within these limits.

Sir JAMES FOWLER described a case which had come under his notice in 1885, when artificial pneumothorax was induced in a youth aged 21 for hæmoptysis. The patient had been in hospital for 31 days, and during severe attacks of hæmoptysis 196 ounces of blood were brought up. After the pneumothorax the patient had two attacks of hæmoptysis during the five days he lived, during which 4 and 2 ounces of blood were coughed up. Post-mortem examination showed the presence of an

old cavity at the apex of the left lung from which the blood had come, the upper lobe and the right lung being infiltrated with miliary tubercle. Sir James Fowler considered that pneumothorax was one of the two great advances which had been seen in the treatment of tuberculosis.

Dr. S. VERE PEARSON said that the more experience he gained the more he felt that too much diffidence was shown in resorting to artificial pneumothorax. He did not advocate it in early cases. After quoting two cases illustrating its value, he said that he agreed with other writers as to the impossibility of ascertaining by any means short of puncture with a hollow needle connected with a manometer, whether or not adhesions were present. The form of needle used for an initial operation was unimportant, and he believed in trying the simplest kind first. He had abandoned a great number of punctures when met by failure to find free pleural surfaces, and persistent endeavour by ordinary means when initially only a very incomplete pneumothorax could be produced on account of adhesions. He did not usually try again after two séances with about three punctures each. It was in the days, now several years ago, when he used to try to tear adherent pleural surfaces apart in cases with extensive adhesions by repeated doses of gas at high pressure, that he met with the only suggestion of gas embolism he had come across in his own practice. The patient became semi-conscious for a few minutes, and afterwards for several hours presented partial hemianopia and hemiparesis. With regard to pleural reflex, twice he had encountered alarming symptoms, which perhaps ought to be ascribed to this reaction, but the effects produced by a very small initial dose of gas, given with all the manometric readings favourable, hardly accorded with those usually ascribed to pleural reflex. The dose immediately set up most distressing dyspnœa of the asthmatic type. In the first case this subsided in a few hours. The hopelessness of the outlook unless compression treatment was successful induced him to make a second effort, but again the same symptom arose and took many hours to subside. In the second case the dyspnœa increased progressively unto death within an hour and a half after a dose of only about 100 c.cm. of oxygen. The gas was introduced on the advice of a consultant into the side containing the lung with least extensive disease, in the belief that this disease was that which was active, and that the outlook in any case was very bad.

In his series of cases of effective compression fluid occurred about as frequently on one side as the other, and in partial as in complete pneumothoraces. Of 56 cases, 23 had been right-sided and 33 left. Of the former, 8 were partial; 2 of these and 10 of the remainder had fluid. Of the latter, 7 were partial. Four of these partial ones and 14 of the complete pneumothoraces developed fluid at some time or other. A striking thing about the cases with fluid, if they were properly handled, was that the ultimate results were but little worse than those following dry pneumothorax. There were several points connected with fluid which might profitably be discussed. The fluid was generally at least a nuisance and often added a good many extra problems and difficulties in the management of the case. What were the circumstances which called for aspiration? Did replacement by oxygen instead of by nitrogen or air lead to quicker absorption? He had come to no final conclusions in either case. A chest full of fluid should be aspirated if possible. Such a cavity should be treated conservatively as long as it was purely tuberculous; this was almost invariable in these cases; it should not be opened by any cutting operation. When any fever, other than the slightest, persisted for many weeks and seemed to be caused by the pleuritis and the effusion aspiration should be resorted to, especially if malaise, anorexia, and indigestion were severe. If re-expansion of the lung was difficult to control and new adhesions seemed imminent, it was best to empty the chest as completely as possible and replace the fluid by gas. Under these circumstances one should not wait long, say only until the cavity was about one-third or one-half full, before repeating the procedure. Apart from the foregoing considerations he could see no advantages in aspirating the fluid. Whenever he aspirated he tried to get all the fluid off and replaced by gas. Fluid cases required more frequent reference to the X ray room than dry cases.

In England we were behind the continental workers in dealing with patients who presented all the indications of successful treatment by pneumothorax, but whose adhesions prevented success. He had been much impressed by Jacobaen's paper on the cauterisation of adhesions by the aid of the thoracoscope and a galvano-cautery. This author had operated by these puncture methods on 40 patients with partial adhesions. In 30 of the 40 he was able to accomplish what he had set out to do. In 26 he produced a more effective pneumothorax and thereby benefited the patient. With over 100 cauterisations he had never met with secondary infection and only once did hæmorrhage arise. There was incompetence from which patients suffered because of the hiatus between the physician and surgery—this must be bridged. For the division of partial adhesions, because purely tuberculous lesions were being dealt with, he favoured on theoretical grounds those methods which avoided, as far as possible, cutting operations.

Dr. NEVILLE COX referred to the danger of using a pointed needle for the first operation, and to the risks of tuberculin injections in the after-treatment. He thought that a matter of paramount importance to tuberculosis officers and others dealing with large numbers of phthisis cases, especially among the industrial classes, was the indications for the treatment, and whether it was justifiable to use it in some of the so-called early cases, pointing out the notoriously bad prognosis in such cases, where bacilli were persistently present, treated on ordinary lines. He also referred to the need of competent surgical assistance in some of the complications of pneumothorax, and thought that the larger sanatoriums should have properly equipped operating theatres, with surgeons attached, to deal with such cases.

Dr. DONALD HALL had been employing the treatment for two years—his only regret was that he had not employed it earlier, for he was absolutely convinced of its great merit. He thought that by the profession as a whole the treatment had not received the recognition which was its due. He urged that great care ought to be taken in the selection of cases, for although the patient might have nothing to lose, the treatment had, and therefore, until artificial pneumothorax was more widely adopted and approved, each avoidable unsuccessful case was an error in tactics on the part of its exponents. He now used air in preference to nitrogen. On four occasions he had made his first puncture with a Lillingston needle, but for first puncture he preferred the Riviere trocar. All his cases had been X rayed before and during treatment. He had found skiagrams of great help in determining the extent of collapse, but he would not be deterred by an adverse X ray report from undertaking a case the clinical physical signs of which were favourable. He had kept to low pressures, aiming at obtaining + 5. His only unfavourable results had been cases in which, owing to adhesions, it had been impossible to produce more than partial collapse. So far he had met with no serious complications, such as perforation of lung, pleural shock, or air embolism.

Dr. JANE WALKER said that at the East Anglian Sanatorium patients had been treated by the method since 1912. The number of patients treated was 117, in 12 of which there had been failure to produce a pneumothorax. Those selected had been advanced cases in patients in whom there was little prospect of recovery, so that the percentage of "cures" was necessarily small. Artificial pneumothorax had been induced when there was evidence

of general toxæmia, and when one lung only was extensively diseased, with a possible small lesion limited to about a fourth of the other lung. The treatment would not be employed if there were extensive disease in the other lung, if there were albuminuria, or if the patient were of a very nervous temperament. A small amount of disease in the other lung was certainly not a contraindication, and in a large number of cases, with the general improvement in the patient's condition, a diminution in the signs over the other lung had taken place. Of the 117 cases, 73 were of females and 44 of males. Their ages varied from 8 to 60. Sixteen under 16 years of age, 12 girls and 4 boys, and of them 11 had bacilli in the sputum, 4 sputum without bacilli, and 1 had no sputum. Nine of the 16 were alive, 1 treated in 1912, 4 in 1915, 1 in 1917, 1 in 1918, 1 in 1920, and 1 was now under treatment at the children's sanatorium. Of the remaining 101 cases, 37 were alive as far as was known; of these 16 had been treated by this method since the middle of 1920, and 11 of them had a very good prospect of recovery; 64 were known to have died, so that roughly two-thirds had died already, and a good many more were likely to follow.

So far there had been no serious accidents connected with the treatment; occasionally a vein had been punctured. The simplest possible form of apparatus was used, the only modification since 1912 being that for some years past air had been used rather than nitrogen. Oxygen had not been used for the initial operation. The patients were prepared by giving them omnopon a couple of hours or so before, and novocain or locæsthetic was used as a local anæsthetic, care being taken to anæsthetise the deeper tissues as well as the skin. On the first occasion 200–250 c.cm. were usually inserted, next day 300 c.cm., and then after a day's interval 350 c.cm., and so on, gradually lengthening the intervals. It had been the practice lately to give smaller doses at more frequent intervals, so that a patient was rarely allowed to go for longer than three weeks without a refill, and rarely as much as 1000 c.cm. were given for the first six months or so. The first few refills were usually finished with a negative pressure, and a pressure of + 10 was seldom exceeded later on. During the last four years X ray examinations had been made on all cases, and the presence of fluid had been detected in a large proportion. Prof. Saugman's estimate of 50 per cent. was not far from the mark. The disadvantages of a large quantity of gas were breathlessness, too great strain on the other lung, and digestive disturbances. It was a curious fact how difficult it was to make patients gain weight during treatment by this method. Dr. Walker felt very strongly that the time had come to consider whether this treatment should not be applied to cases before the patients became so seriously ill. On all the cases under consideration artificial pneumothorax was induced as a last hope, and although the percentage of recoveries was so comparatively low, still life for these people had been made far more tolerable. Distressing symptoms had been greatly alleviated and life prolonged, so that the procedure had been well worth while.

Dr. L. S. BURRELL said that he proposed to refer to two conditions which might arise during the treatment—one gradual obliteration of the pneumothorax cavity, the other the formation of pleural effusion. Out of 77 cases in which he had produced an artificial pneumothorax and had kept it up for a month or more, in five the air space had gradually become smaller until eventually it had closed. In one of these the parietal pleura became much thickened, so that the needle had to be introduced far to reach the air space, but in the other four there was no great thickening of the pleura. Having described these cases he said that in all of them the disease was on the left side, and each patient was over 30 years of age. Treatment was started because of repeated hæmoptysis in two cases, and because of progressive disease in spite of sanatorium treatment in the other three. The pneumothorax seemed to have hastened the formation of fibrous tissue, and all the cases had been much improved, in spite of the short time they were under treatment. He was of opinion that the treatment should be kept up for at least two years when possible, and he had seen a relapse follow four months after treatment had been stopped in a patient who had been having refills for 2½ years. Out of the 77 cases of artificial pneumothorax he had had 18 cases of pleural effusion, or 22·3 per cent., but he did not include among the 77 any case in which the treatment was not continued for at least a month. Of the 18 patients, in 11 the pleural effusion developed within the first four months of treatment, in another six it developed before the end of the eighth month, and in 1 after 19 months. Three were dead, three were very ill, but the remainder were doing well, and seven of them were at work. The fluid often became thick, and might contain tubercle bacilli, but no other organisms had been found in the series. He had noticed that patients from whom the fluid was not withdrawn often did quite well, and appeared to be unaffected by the effusion. It was his practice, however, to replace the fluid by air or oxygen about every three months.

Having demonstrated X ray prints obtained from a case of this kind, he spoke in favour of the double manometer, although he generally used the apparatus devised by Drs. C. Lillingston and S. V. Pearson. With a double manometer, as found in Dr. Parry Morgan's apparatus, the oscillations were more easily seen—a great advantage, especially at the initial operation. Moreover, with the double manometer, it was possible to know the pressure of the gas from the bottle and the intrapleural pressure at the same time. One could also discover by this manometer whether the gas was flowing into the pleural cavity.

Dr. S. MELVILLE said that he would plead for the collaboration of the clinician and the radiologist more in the induction of artificial pneumothorax than in most other things. (1) To determine the distribution of the disease. It was well recognised that the skiagram showed more extensive shadows of disease than were appreciable by physical examination. (2) In cases in which there was considerable disease in one lung there was speedily set up a compensatory emphysema in the more healthy lung, which unquestionably masked the physical signs. (3) To localise the position of definite adhesions with the possibility of indicating the most suitable site for inserting the needle. If a case were systematically watched during the intervals of filling, adhesions were seen which were unsuspected, and it was interesting to watch the slow but definite stretching of these adhesions. As the lung became decompressed they were seen to shorten—in other words, the lung expanded along the lines of the adhesions. In practically every case after a fair amount of gas had been introduced the other lung was seen to become less translucent. Attention had been drawn to this by Dr. G. Lucas, of Banchory. The conceivable therapeutic value of this change he ventured to emphasise, for although some of the lessened translucency might be due to compression, there was a hyperæmia set up which must have some influence upon any diseased focus in the more healthy lung.

SECTION OF OTOLOGY.

A MEETING of this Section of the Royal Society of Medicine was held on May 20th, Sir CHARLES BALLANCE, the President, in the chair.

The Pathology of Deaf-mutism.

Dr. J. S. FRASER (Edinburgh) showed a remarkable series of slides of sections of ears from deaf-mutes, demonstrating the structural defects. The contribution was based upon the examination of 130 children at a deaf and dumb school; also a number of cases at the Royal Infirmary, Edinburgh. Of the 130, 6 were instances of congenital aphasia, but they could all hear

fairly well, one or two being able to obey instructions given in a whispered voice while their backs were turned. One child who could hear fairly well had deaf-mute parents. In 4 out of these 6 congenital cases the vestibular apparatus was normal. It was, he said, questionable whether a school for the deaf and dumb was the best place for educating children with congenital aphasia. Of the remaining 124 cases, 53 had congenital deafness, and in 13 others it was probably the case, too. Of the 53 definite cases the parents were blood relations in only 3. In 18 cases there was deaf-mutism in the family, but several families supplied more than one child to the institution. Ten children showed evidence of past middle-ear suppuration, 16 had a little hearing. In 23 the vestibular apparatus was normal, in 17 it was subnormal. Fifty-eight of the children were cases of acquired deafness. In 22 cases the deaf-mutism was due to the results of zymotic diseases other than epidemic cerebro-spinal fever. Of these 22, 17 had learned to speak before the onset of the deafness, but by the time they were sent to the school speech had practically disappeared. In 3 chronic middle-ear suppuration was still present; 9 had had mastoid operations, 2 had large dry perforations, 2 had retracted scars, and in only 4 was there anything like a normal drumhead. In 11 cases vestibular reactions were absent; in 8 others they were practically absent. Cerebro-spinal fever was responsible for more marked deafness than was any other condition, and it was associated with great loss of vestibular reactions. There were 17 of these cases. Congenital syphilis was present in 7; in some the Wassermann reaction failed to reveal the syphilis.

The PRESIDENT spoke highly of the value of the demonstration, and paid a tribute to Dr. Fraser for the beauty of the preparations.—Mr. A. CHEATLE asked whether Dr. Fraser had any views as to why islands of hearing occurred in these cases. With regard to the site of the malformation, it was held that the structures which were late in the evolution of the ear were more liable to malformation than those formed at an earlier epoch, and the cases now illustrated bore that out.—Dr. ALBERT A. GRAY (Glasgow) said he had found that the tensor tympani muscle had not undergone any degeneration in deaf-mutism. Very few deaf-mutes were absolutely deaf, and he suggested that the response occasionally to the loud sounds heard was sufficient to keep the tensor tympani healthy. He was not able to speak of the stapedius. And instead of the labyrinth in these cases being smaller in size than the normal, he had found it to be even larger than in the usual child.—Dr. DAN MCKENZIE expressed his satisfaction that this somewhat neglected region of aural investigation was being taken up. He thought it important to endeavour to differentiate between cases due to intra-uterine disease and those owning some hereditary defect. The precise nature of the latter was still questionable. It was interesting to note that in two of Dr. Fraser's cases there had been fracture of the cranial base. He discussed the probable mode of infection in cases of the condition having followed meningitis.—Mr. SYDNEY SCOTT congratulated the exhibitor and the Section on the beautiful sections shown by Dr. Fraser. One of the most interesting of the series was that in which in one ear there was a distended ductus cochlea, and in the other there was collpase of that structure, and he thought the following up of that subject might throw some light on the origin of the perilymph and endolymph.

Dr. FRASER, in his reply, said he believed that in congenital deaf-mutes the organ of Corti was badly formed, but not sufficiently so to preclude the hearing of very loud sounds; it was comparable to the perception of a bright light by a very defective eye. In the first case of which he showed slides, the part of the otic vesicle which normally formed the utricles and canals developed all right, but that which was going to form the saccule of the cochlea did not expand properly. There was no sign of abnormality in the vascular supply of the cochlea. He remarked on the French view that congenital deaf-mutism was not so much a question of the inner ear as of the hearing centres in the brain, and he intended to report later on the brains of these cases.

Sinusitis in Children.

Mr. F. J. CLEMINSON read a paper on this subject, based on a study of 85 cases. The sinus chiefly considered in this contribution was the maxillary antrum, but some of the cases showed ethmoiditis, and some frontal sinusitis infection also, with probably involvement of the sphenoid. The ages of the cases varied from 3 to 14 years. Among the symptoms complained of were running at the nose, nasal obstruction, constant cold, deafness, chronic cough, frontal or supra-orbital headache, mental dullness, and lethargy; very occasionally there was nose bleeding. Otorrhœa might be present in one or both ears. Diagnosis rested on the symptoms and signs, transillumination, radiography, and exploratory puncture. One case dated back to an attack of diphtheria three years before, and that raised the question of carriers during a long period. In 15 of the cases the infection was due to a single organism. Many cases of recent infection cleared up after a solitary puncture.

The paper was discussed by the PRESIDENT, Mr. SCOTT, DR. E. WATSON-WILLIAMS (Bristol), Mr. H. D. BLASTOW, Mr. G. H. LAWSON WHALE, and Dr. J. S. FRASER, and Mr. CLEMINSON replied.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

TRYPANOSOMIASIS: NEW METHOD OF TREATMENT.

AT a meeting of this society, held on May 20th, Prof. W. J. R. SIMPSON presiding, a paper was read by Dr. CLAUDE H. MARSHALL, S.M.O., Uganda Protectorate, on this subject. He prefaced an account of the treatment, which had been originated by Dr. S. M. Vassallo, of the Uganda Medical Service, and himself, by reference to the causation of sleeping sickness and its dependence on the three factors—(1) the human host, (2) glossina tsetse-fly, and (3) the trypanosome. Any two of these were harmless in the absence of the third, therefore the disease might be dealt with either by exclusion of human beings from tsetse-fly areas, banishment of the fly by robbing it of shelter and food, or by the cure of infected persons. It was pointed out that application of the first of these measures involved surrender to the glossina and abandonment of vast tracts of country. Destruction of the fly's breeding ground and removal of its food-supply had met with only limited success. Efforts at cure of infected people had proved most discouraging, for, in spite of marked temporary benefit resulting from many drugs, no permanent cure could yet be relied on. Administration of a single dose of salvarsan, neosalvarsan, or atoxyl sufficed to sterilise the blood temporarily, but after about four months the disease recurred and was eventually fatal.

To explain this unhappy course of events two theories had been advanced—(1) that the trypanosome in a resistant form became atoxyl-fast; (2) that some of the parasites escaped the drug by seclusion in the central nervous system. The latter explanation he regarded as the correct one, and supported it by reference in detail to four cases, whose blood and gland juice proved to have been freed from parasites by intravenous injection of neokharsivan, but whose cerebro-spinal fluid had been found to contain trypanosomes as early after infection as three days and as late as 3½ months in each instance in two of the four cases. He suggested that the marked thickening of the cerebral meninges, found in post-mortem examinations on fatal cases of the disease, was due to the action of the trypanosome in the central nervous system in producing thickening and occlusion of the choroid plexus at

an early stage of the disease, and thus preventing access of drugs from the circulation into the spinal fluid. In support of this view he quoted Prof. A. Keith as authority that infections in the basal cisterns of the brain reached the cervical glands, probably through the nerve sheaths, where some connexion existed between the cerebro-spinal and lymphatic systems. On these grounds Dr. Marshall regarded intravenous medication as useless, when once the central nervous system was invaded, as, whatever drug was employed, its effect would be confined to the general circulation. In 1918 he first attempted intrathecal treatment. He injected a patient with 0·6 gm. of neokharsivan intravenously, followed three days later by injection of 0·025 gm. of the same drug into the spinal canal. This proved a failure, for the man died on the following day. In a subsequent well-marked case of sleeping sickness, however, three hours after intravenous injection of neokharsivan, he withdrew two ounces of the patient's blood, kept it under sterile conditions for 20 hours, and then injected 20 minims of the resulting serum into the spinal canal, the same amount of spinal fluid having been previously drawn off. No further treatment was given. Examinations of the blood at intervals of three months had failed to show any parasites, and when last seen in December, 1920—i.e., 27 months after the original injection of serum—the patient was quite well. Up to the end of 1919, 13 other cases had been similarly treated, and the results had been published in the *British Medical Journal* of May 22nd, 1920. Dr. Vassallo, who had relieved him in February, 1920, had kept these cases under observation, and had dealt with a number of others on the same lines in the past year.

The results of 30 cases so treated by intravenous injection of neokharsivan, followed by intrathecal injection of serum, were recorded in a table. This showed that after intervals varying from 27 to 6½ months from the date of treatment to December, 1920, 23 cases, or 76·6 per cent., were quite well, the blood and cerebro-spinal fluid had proved negative on examination, and the enlarged glands had disappeared. In 4 cases no records of after-history existed, and 2 cases, or 6·6 per cent., in a very advanced stage at the time of treatment had died. A further series of 23 cases treated less than six months previously had been re-examined with negative results and appeared quite well. Dr. Marshall discussed the possible action of salvarsanised serum injected into the spinal canal, and did not consider the beneficial effects were attributable purely to its antiparasitic properties. It was suggested that normally the formation of some trypanolytic antibody, in response to a blood invasion by the parasite, effected a natural cure only in so far as the circulation was concerned. The cerebro-spinal fluid containing no antibodies and being cut off from the blood by pathological changes, already put forward, it followed that a natural cure could not include the central nervous system. He maintained, however, that blood serum containing trypanolysin, when injected into the spinal canal, was capable of killing the parasite there either by direct action, or, in the opinion of Dr. Abadie of Paris, by stimulating the formation of complement. Dr. Marshall related, in support of the trypanolysin theory, that in several patients, who had received no intravenous treatment at all, a quantity of blood had been drawn off from a vein and allowed to stand for three days. The serum had then been injected into the spinal canal, on the supposition that the exposure would have killed off any existing trypanosomes in the blood, and that the trypanolysins contained in the serum would dispose of the infection in the cerebro-spinal fluid, simultaneously with the destruction of the parasites in the blood stream by their own antibodies. The first case so treated had shown good results for six months up to December, 1920, when no trypanosomes were found in the blood or spinal fluid, and the enlarged glands in the neck had disappeared.

He stated that Dr. Vassallo, following up this line of treatment, was now trying the effect of the intrathecal injection of serum from a previously treated case into a patient with sleeping sickness, but it was too early yet to give an opinion as to the result. Great interest attached to the case of their only European patient, who was present at the meeting, and whose history Dr. Marshall described in detail. Attacks of what was thought to be malaria began on July 30th, 1920, and on August 24th abundant trypanosomes were found in the blood. When seen a month later the man had lost 2 st. in weight, and suffered from lassitude, malaise, loss of appetite, attacks of vomiting, headache, and pains in the back and limbs. Blood examination showed two or three trypanosomes per field. He was treated by intravenous injection of 0·9 gm. of neokharsivan, and half an hour later blood was withdrawn from a vein—12 c.cm. of the resulting serum were injected into the spinal canal. A severe reaction, lasting several days, was followed by uninterrupted recovery, the loss of all symptoms, and complete regain of weight. Subsequently, in November, 1920, although the blood yielded a negative examination microscopically, one of two rats which had been inoculated with the patient's blood showed trypanosomes four weeks later, while the other proved negative. At the end of 1920 examination of the patient by Prof. J. W. H. Eyre revealed one degenerate trypanosome in eight slides, but sub-inoculations of his blood into guinea-pigs gave negative results. Various possibilities were discussed to explain the course of the case, and it was regarded as probable that the presence of degenerating trypanosomes was but a feature of the normal process of cure by the new method. Subsequent examinations of this patient's blood and cerebro-spinal fluid, which were also inoculated into rats and mice in January and April, 1921, and as recently as May 2nd, had all yielded negative results, and in view also of his present robust appearance, they felt justified in presuming the case cured. It was proposed in future to treat advanced cases of sleeping sickness by injecting serum into the lateral ventricles as well as into the spinal canal, on account of possible occlusion of the foramen of Magendie by thickened membrane preventing intrathecal injections from reaching the cerebral cavity.

In conclusion, Dr. Marshall held that of the two distinct foci of infection, the central nervous system was the more important, and could be dealt with by a single dose of serum. He regarded the results of such serum treatment in over 50 cases as better than any hitherto obtained by injections of salvarsan, atoxyl, antimony, or other drug preparations, and suggested that a trypanolysin was responsible for the cure. In this belief it appeared reasonable to make use of animal serum for treatment, and to hope that in man prophylaxis and immunisation against trypanosome infection might be so attained and early diagnosis effected by complement-fixation tests—problems which Dr. Vassallo was investigating. With reference to the possible application of a similar scheme of treatment in order to check trypanosomiasis in animals, Dr. Marshall urged the coöperation of veterinary medical science in forwarding so important a line of research.

Discussion.

In opening the discussion on Dr. Marshall's paper the PRESIDENT commented particularly on the very healthy appearance of the patient exhibited, which lent justification to the belief in his cure. He referred to Prof. Warrington Yorke's paper read at a previous meeting on trypanosomiasis, which had given rise to a lively discussion on the experimental suggestions made as to the advisability of prophylactic game destruction, and as to the sum of £50,000 required for the investigation of the problems of sleeping sickness. Then both the medical and veterinary aspects had been discussed; now the question from its purely medical and therapeutic standpoints had been brought to notice, and the light thrown on the subject by Drs. Marshall and Vassallo offered a brilliant means of treating

trypanosome infection. It was impossible to estimate, in coping with so great a scourge of tropical Africa, what such a solution would mean to Africa. In his opinion the paper just read was one of the most valuable yet brought before the society, and promised to deal effectively with the human form of trypanosomiasis. The group of 30 cases treated by serum showed 22, or 73 per cent., to be still alive and well; of 13 who had been treated a year or more ago, 9, or 69 per cent., were now living and in good health. He regarded these high percentages of recoveries as a great and remarkable achievement compared with the few recoveries under other methods of treatment. There remained to be seen whether the same good results would be obtained with the Rhodesian type of infection. The line of treatment by this serum-therapy rested on a thoroughly scientific basis; by allowing the patient's blood to stand, the trypanosomes contained in it were killed after yielding up their intracellular enzymes to the serum, which was used for intrathecal and intraventricular injections and obtained direct access to the most important focus of disease, the central nervous system. Prof. W. D. Halliburton in his presidential address in October, 1916, before the Physiological Society, had shown that in normal individuals injection into the cerebro-spinal canal enabled substances to reach the general circulation, whereas injections into the blood failed to gain the cerebro-spinal fluid. This fact would account for the failure of drugs, injected intravenously, to cure trypanosome infection, and justified the intrathecal method of administration of a serum, whose action was comparable to the effect produced in other diseases by the use of vaccines and sera containing specific intracellular products or bacteriolytic enzymes or antitoxins. Professor Simpson referred to the auto-serumtherapy of Dr. Senn, of Bombay, as providing a similar line of treatment. He had been impressed by the method advocated, which called for opportunity of trial on a large scale and appealed to veterinary coöperation and the wealth of a Rockefeller in order to place so important a discovery on a sound footing.

Prof. W. D. HALLIBURTON, speaking for himself, said that for many years he had been interested in cerebro-spinal fluid and the problem of its secretion and functions. He took exception to scientific workers remaining in the clouds and avoiding propositions of practical importance, and though admitting of qualification, quoted Prof. Karl Pearson's dictum that science, in its application to mankind, was the only form of science of value, whereas science for science sake was of no value. He congratulated Dr. Marshall and his colleague for their striking discovery, one which could be regarded as ranking in importance with that of Dr. Christopherson in the treatment of bilharzia by antimony tartrate.

The cerebro-spinal fluid was a secretion, not a leakage fluid like lymph. He drew comparison with the structure of the salivary gland composed of groups of cells arranged in acini and bordering a lumen through which the saliva passed to the mouth—the blood capillaries between and outside the acini leaked lymph, which was taken up by the cells and converted into saliva. In the case of the choroid plexus, or choroid gland as Prof. Mott called it, the blood-vessels lay inside and were covered by particular cells; the lymph which leaked from the blood was taken up by these choroidal cells and passed as cerebro-spinal fluid into the lateral ventricle and subarachnoid spaces. The cerebro-spinal fluid was of constant composition, an important point owing to the sensitiveness of the nerve cells which it bathed, and maintained a normal osmotic pressure beneficial to the nerve cells. The cells lining the choroid plexus afforded a barrier, preventing anything harmful—e.g., arsenic or antimony—from reaching the cerebro-spinal fluid, and so the nerve tissues, with the exception of volatile bodies—e.g., alcohol—the only substance known which could get through. By some back-door means spirochætes and trypanosomes did succeed in gaining admission to the cerebro-spinal fluid, where the only drug fatal to them was also fatal to the nerve tissues of the host, hence intrathecal injections of arsenic or antimony preparations could not be applied with safety. The fluid found means of exit through the arachnoid villi projecting into the sinuses—the sites of leakage of excessive cerebro-spinal fluid, which, therefore, passed into the blood stream and not into the lymph. He regarded Dr. Marshall's view that the trypanosome, by having obtained access to the central nervous system, was protected from the action of drugs in the circulation as the correct explanation of the failure hitherto attending efforts at treatment of sleeping sickness—that protection was afforded in part by the normal function of the choroidal cells, in part by occlusion, the result of trypanosome infection. The cells still opposed their barrier to abnormal substances, but allowed material of normal composition to pass through.

Dr. P. H. MANSON-BAHR described two Europea cases of infection by *Trypanosoma gambiense* whic he had under observation at the London School of Tropical Medicine. One was infected five years ago in the Congo district—there was no doubt as to the nature of the disease, but only once in five years had trypanosomes been found in the blood—and never in the cerebro-spinal fluid. It was now a typical case of sleeping sickness with symptoms of pachymeningitis. He asked whether in this case the disease was caused by trypanosome invasion of the central nervous system. In the second case Dr. Marshall's serum treatment had been tried, in addition to salvarsan and neokharsivan, with no effect on the regular appearance of the trypanosomes in the blood, which exhibited a large infection, amounting to a count of 16 trypanosomes to every 200 leucocytes. He asked in what way the treatment applied had gone wrong and urged the importance of treatment on a scientific basis. Natural immunity to trypanosomiasis was to be considered, comparable with that to malaria. An explanation was needed as to why some cases in which trypanosome infection was not a self-limited disease recovered by natural immunity and others resisted every form of treatment. Though not convinced as to the permanence of cure in his cases, he warmly welcomed Dr. Marshall's paper as a valuable contribution to the treatment of the disease. The recital of his own cases were a sad experience of treatment defied for over two years.

Dr. G. C. LOW thought that 21 years' experience, dating back to the Uganda epidemic, had given him a claim to know something of the treatment of sleeping sickness. He was sceptical as to the reliability of the cures which Dr. Marshall had claimed, but which time alone could guarantee. The enthusiasm attending the first use of one dose of salvarsan as the certain remedy for syphilis, when now we knew that even repeated doses, combined with mercurial inunction, did not effect a sure cure, did not incline him readily to accept Dr. Marshall's serum treatment of sleeping sickness as unquestionable. That some strains of certain parasites were extremely resistant to treatment by drugs had been proved in the case of malaria and leishmaniasis; and it was so also with trypanosomiasis, as in Dr. Manson-Bahr's cases. Out of all the Europeans who had come to England for treatment suffering from infection by *T. rhodesiense*, only one was alive, and another had lived for two years and seven months. He suggested that there were other hiding-places for the trypanosome than in the brain, and that the small-celled infiltration found in the heart muscle and other parts might be due to toxins poured out by parasites in such hidden foci of infection. He referred to latent cases of trypanosomiasis dying after four or five years' apparent freedom from the disease, and stated that no case could be regarded as cured in less than three years at earliest. It was impossible, therefore, to regard Dr. Marshall's cases as cured after only one year. He denied that a serum-therapy was essentially the method of cure, quoting cases which in Uganda as far back as 1902 had been cured by doses of liquor arsenicalis given

by the mouth, by atoxyl, and others by antimony injections. Native cases of chronic infection showed the necessity for care in claiming cures. No untreated case among Europeans had recovered, although natives might survive for a considerable time. He hesitated to express an opinion in the presence of the patient attending the meeting, but candidly he did not regard his cure as certain and beyond doubt. He believed that it was premature to regard Dr. Marshall's method of treatment by one injection of serum as a so-called cure. The macroscopical evidence of infection of the central nervous system provided by pachymeningitis was not to be considered as the sole proof of cerebral invasion by the trypanosome, for it was by no means uncommon to find such evidence only after microscopical examination of the meninges. He found it difficult to understand trypanolytic action of the serum suggested by Dr. Marshall, and why the serum injected intravenously failed, but when given intrathecally succeeded in killing the trypanosomes in the cerebro-spinal fluid.

Lieut.-Colonel R. H. ELLIOT pleaded for full opportunity to be given to the trial of Dr. Marshall's new line of treatment, and suggested a movement appealing to the Colonial Office to take up the matter with a view to thorough investigation.

Sir HUGH CLIFFORD, Governor of the United Provinces of Nigeria, in the course of his remarks, drew attention to the huge area covered by Nigeria, 335,000 square miles in extent, occupied by 17 million inhabitants, with only one political officer for every 64,000 population. He described the importance to be attached to the provision of a sound method of treatment as inestimable in dealing with sleeping sickness, a disease so crippling to the commercial prosperity of our African colonies. He drew a vivid picture of the insect-ridden condition which from time immemorial had dominated and moulded the character of inhabitants of the tropics, and so seriously influenced trade and productivity in tropical Africa. The tropical side of medicine was one which called for careful study by all those coming to live in the tropics, and should be encouraged in every possible way. Colonel Elliot's appeal touched him very intimately, and he would personally urge the Colonial Secretary to provide opportunity for Dr. Marshall's important discovery to be thoroughly tried and investigated.

Dr. E. T. JENSEN referred to the financial assistance alluded to by Colonel Elliot as a substantial sum likely to be forthcoming to advance the means of treatment set on foot by Dr. Marshall's valuable work. He brought forward as a formal motion that every facility should be given to Dr. Marshall's work being carried further with a view to its being thoroughly tested in the treatment of sleeping sickness, and that representation to that effect should be submitted to the Colonial Office by the society. —This proposal was seconded by Lieut.-Colonel ELLIOT, and when put to the meeting was unanimously carried.

Dr. W. T. PROUT hoped the new line of treatment would meet with every encouragement and trial. He laid stress on the point that Dr. Marshall had made no claim of a complete and final cure in the case of the patient present at the meeting, who certainly looked in the best of health. His results so far had been most promising, and he would avail himself of an early opportunity of representing the subject to the Colonial Office.

Dr. C. F. HARFORD avoided the technical aspect of the question of treatment, for it was 31 years since he had been in touch with sleeping sickness. He suggested that a difference existed between the cases treated in the country of origin and those treated here, which might account for points apparently at variance. In infected countries the greater opportunities, which were offered than in this country, of obtaining light on the problems of the disease might be one cause of difference in the results of observation. He much hoped the Colonial Office would take up the matter, which on account of its great practical interest and importance should be probed to the bottom.

Dr. MARSHALL in his reply expressed his gratitude to the society for the reception given to his paper, particularly to Prof. Halliburton for his account of the choroid plexus, and to his Excellency Sir Hugh Clifford for his very kind remarks. Dr. Manson-Bahr and Dr. Low had made comparison between the uncertainty of treatment in sleeping sickness and that of malaria and syphilis. Because in some cases quinine and salvarsan respectively had no effect on either of the two latter diseases, was no reason why they should not be tried in ordinary routine cases; the same argument surely applied to trypanosomiasis and its remedy. The European had a higher resistance to trypanosome infection than the native. If cases in natives had gone on for two years without treatment and remained well, it was a sign they had improved even if they had not been cured.

A cordial vote of thanks to Dr. Marshall for his paper was unanimously carried.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE ANNUAL CONGRESS.

(*Concluded from p. 1136.*)

Mr. E. TREACHER COLLINS delivered the Bowman Lecture, taking as his subject Changes in the Visual Organs, Correlated with the Adoption of Arboreal Life and the Assumption of the Erect Posture.

Treatment of Manifest Concomitant Strabismus.

A discussion on this subject was held on Friday morning. It was opened by Mr. CLAUDE WORTH. He said the matters to be considered in the treatment of convergent squint were: (1) prevention or cure of amblyopia exanopsia; (2) correction of refractive error; (3) fusion training; (4) operation. If a constant unilateral squint had lasted a considerable proportion of the child's life, in the absence of efficient treatment, the deviating eye would be found to be more or less blind; and it was the prevalent view that the amblyopia was usually the result of disuse. The younger the child the more rapid was the loss of sight; one who began to squint constantly at one year of age might lose central fixation in three to four months. The child must be forced to use the deviating eye; this was far more important than all the rest of the treatment of squint. In a case of recent squint, in order to prevent amblyopia or to cure low degrees of it, the fixing eye should be kept under atropine until it became the deviating eye. The child should then be seen again after the effect of the atropine had passed off. After this the deviation must be kept alternating, one or other eye being atropised occasionally, if necessary. If central fixation in the deviating eye was absent or unsteady, the atropine treatment was not sufficient: then the fixing eye should be continuously occluded. With regard to the correction of refractive error, he said no child was too young to wear glasses if they were required. In regard to fusion training, certain principles must apply to all methods. The child must be young, preferably under 6 years of age, and the sight of the deviating eye must be good. The most difficult step was to overcome the suppression. Most surgeons were now agreed that the essential cause of squint was a defect of the fusion sense. The object of fusion training was, not to correct deviation—except in small degrees—but to enable the patient to see binocularly when the visual axes shall have been restored to approximately their normal relative directions. Discussing the question of operation, he said that if measurements showed that the angle of deviation was not decreasing, operation became necessary. If there was no hope of binocular vision, it was not his custom to operate until the seventh or eighth year. He frequently, at an earlier date in his career, performed tenotomy of the internal rectus in

combination with advancement of the external in high degrees of convergent squint; but he abandoned the practice in 1905, and had since relied on advancement alone. Except in very small deviations, both externi were advanced. There were, he said, practically unavoidable failures in squint operations; the result attained was a measure of the skill and experience of the surgeon.

Mr. A. J. BALLANTYNE dealt with the subject of concomitant convergent squint, based upon his own experience. The first step should be an estimation of the refraction, and the prescription of suitable glasses to be worn constantly. In many cases the wearing of these, with training if necessary, sufficed. With one exception, his cases were aged 7 years or under. The largest degree of squint corrected was 40°, in a patient 18 months old, whose squint had lasted two weeks. In most of his cases the angle was 15° or less. In a number the eye was already amblyopic. In most cases, he thought, the amblyopia was the result of the squint, hence there was all the more encouragement to attempt to restore vision in the squinting eye. He applied atropine more or less continuously to the sound eye. He was now inclined to operate at an earlier age than formerly. Advancement alone in many cases would bring about an approximately straight position of the eyes; he had never seen over-correction caused by advancement or muscle-folding, hence he would not hesitate to operate at any age. He preferred muscle-folding in the youngest children. He rarely did tenotomy of the internal rectus, and never as the sole means of correcting the squint. In children it was wise to do too little, rather than too much; and if tenotomy was performed, it should be as a last resort. Cases in young children often suggested the existence of a state of excitability and instability of the accommodation and convergence centres, and in these cases the operative treatment of the strabismus was apt to be very disappointing. Failure in these cases was not due to slipping of the stitches, but to looking for a remedy of a mechanical kind for what was really a functional error. His results from training of fusion had been disappointing. We were, apparently, born with a certain racially-acquired degree of binocular equilibrium, but the finer coördination of the eyes necessary for binocular vision required to be learned, like the act of walking, by each individual, and the most useful line of inquiry would be along the evolution of binocular vision in the young child.

Mr. E. E. MADDOX referred to the numerous cases of squint in which the child was unable to fix its attention. Attention had a great effect, especially on the fusion faculty, and the defect in many children was, not the absence of the fusion faculty, but the lack of a stimulus to action. To correct hypermetropia, some occupation on near objects should be provided. Squinting children should be kept from reading early, and their parents should let them use large objects. Moreover, they should be encouraged to look upwards, as that produced a lessened tendency to convergence. He considered that the amblyoscope was very valuable in diagnosis.

Mr. T. HARRISON BUTLER said he could recall only one case in which he had had success with the fusion test; and in that, the case of a boy, he relapsed in a year. Fusion training must only be done in children under 6 years of age, but these were very difficult to educate in such a scientific procedure. He had not met with a patient who came and said he wanted binocular vision. Most operations for squint were asked for on cosmetic grounds. Eight he regarded as the most suitable age for operation, and he did not operate when the squint was no more than 25°.

Mr. M. S. MAYOU said that if a patient had good vision in both eyes and some attempt at fusion, he operated as early as possible, provided the patient had worn glasses a year without improvement. In convergent strabismus up to 15° he did tenotomy of the internal rectus; but in young children 20° could often be corrected by it. When the degree of convergent squint was from 15° to 45° he did an advancement—i.e., tenectomy associated with tenotomy. He preferred a shortening of the tendon and using the stump of the muscle attached to the globe for holding the sutures.

Mr. N. BISHOP HARMAN said the determining factors in squint could be grouped under three heads: (1) defects of the eyes, (2) defects of the muscles; (3) toxic influences. Among 368 infants in a higher-grade school, only 8 had emmetropic eyes. The others had errors of refraction, mainly hypermetropia, and in 126 the errors were considerable. Toxic causes did not claim a high place. The chief cause was defective muscle-balance, but it was not sufficiently recognised, and had not its due place in schemes of treatment. He referred to the recent establishment, in the Belgrave Hospital, of an operative clinic for squint. The method employed there was shortening of one muscle by sub-conjunctival reefing, with lengthening of the antagonist by tenoplasty.

Mr. A. L. WHITEHEAD (Leeds) said his experience was that squint was much more prevalent in hospital than in private practice. He attached great importance to the full correction of the squinting eye, even though it were amblyopic; and the results on the squint had been marked. The treatment should be carried on during from six to 12 months. It must not be forgotten that many cases showed a tendency to spontaneous cure. He liked tenectomy with tenotomy when operating, as Mr. Mayou did. He had never over-corrected when doing this.

Mr. BROOKSBANK JAMES did not regard the amblyoscope as of much use in the matter of training, but it was useful for detecting the presence or absence of the fusion faculty. He did not think squints could be wholly corrected by the reefing operation. He corrected refraction in children of the youngest age, but no adequate training could be done in a child under 4 or 5 years old. In operating, he preferred to do a central tenotomy, then wait, afterwards doing an advancement. He never did both at the same time.

Mr. INMAN thought none of the suggested explanations as to the cause of squint were adequate. Often the owner of the squinting eye had deliberately taken on a squint. A child worked its fusion centre, and then, at 3 or 4 years of age, a squint occurred. It had no reference to near work; and at 6 or 7 years of age it had become well developed, and its possessor was an object of sympathy. He said he had found that an amazing proportion of squinters were left-handed persons, yet among the general population the left-handed persons were from 2 to 4 per cent. Some members of neurotic families were left-handed, some had a stammer, some had a squint. A child practically never developed a divergent squint, the reason being that the convergent squint was the easier. He suggested the close watching of cases by members, and the subsequent comparison of experiences.

Mr. R. R. CRUISE showed a new form of amblyoscope which he had designed, in which ordinary stereoscopic pictures could be used. Those who used it could fuse at their angle and enlarge the amplitude of their fusion. In regard to operation, for many years he had not hesitated to tenotomise. The bogy of divergence, he considered, was greatly exaggerated, especially if one did an advancement first, then tenotomised, dissecting up the conjunctiva to the caruncle. He described the method in detail.

Mr. E. H. STACK, discussing the operations for squint, said he seldom did tenotomy of the external rectus. He advocated a routine examination of the eyes of children before 4 years of age. Proper prisms or spectacles in these early years would probably do very much to save those which could be corrected.

Mr. WORTH and Mr. BALLANTYNE replied.

Clinical Meeting.

On Friday afternoon members attended a demonstration of clinical cases and apparatus at St.

Thomas's Hospital. In the evening, at No. 1, Wimpole-street, further papers were read and discussed.

The Iris-Prolapse Operation for Glaucoma.

Lieutenant-Colonel H. HERBERT read a communication entitled, "A Justification of the Wide Iris-prolapse Operation for Glaucoma." He said the value of the treatment must be determined mainly by the two vital questions: the completeness and permanency of the relief of tension provided, and the safety in the matter of late infection. In a few of the severer chronic glaucomas full relief from abnormal tension was obtained by this method much less quickly and less easily than by some other iris-inclusion operations. But it was in the permanency of relief of tension that iris-inclusion operations in general stood out pre-eminently. This could not be said of many iris-free leaking cicatrices. In the last two years he had come across 13 instances of a late return of tension after iris-free operations. With regard to safety in the matter of late infection, subconjunctival prolapses could be divided into four grades, and these he described. The object of the paper was to remove some of the prejudice with which the operation was viewed.—Several members discussed the paper.

The Rational Treatment of Glaucoma.

Mr. T. HARRISON BUTLER read a paper on this subject. He said there was still considerable difference of opinion as to the significance of the changes discovered in the glaucomatous eye. Examination of the fields of vision both as to the periphery and the centre was of extreme importance. He now rarely operated upon patients for glaucoma in the acute stage; under suitable treatment most cases quieted down, and then the operation was much safer. His practice now was to do the so-called "trap-door iridectomy"—i.e., trephining with a 1·5 mm. instrument and leaving the disc with a hinge. He proceeded to discuss the non-operative treatment of glaucoma, remarking that his own experience overwhelmingly favoured early operation—i.e., as soon as loss of function was realised.

Mr. C. GOULDEN read a paper by himself and Mr. M. H. WHITING on Implantation Cyst of the Sclera following an Operation for Squint, in which they discussed the general subject and gave clinical and pathological particulars of cases.

Sir WILLIAM LISTER read papers on (1) Some Intra-ocular Epithelial Cysts; (2) Punctate Deposits in the Retina.

On Saturday morning there were further papers. Mr. P. G. DOYNE read one on observations with the scotometer, Sir ARNOLD LAWSON on a case of orbital tumour, which turned out to be a neuroma of the nasal branch of the fifth nerve; MR. HAROLD GRIMSDALE on the Mechanism of the Stability of the Eye.

Extract of Cataract by Suction.

Mr. A. W. ORMOND communicated a note on a Method of Extracting the Crystalline Lens in its Capsule by "Suction." The method was introduced to obviate the movement of the lens when incising the anterior surface of the lens with a sharp hook. He showed and demonstrated the apparatus used, which was on the same principle as the Bunsen-Sprengel pump.

Dr. GEORGE MACKAY (Edinburgh) sent a communication explaining a mechanical contrivance for trephining, and Mr. Traquair demonstrated it. It is actuated by clockwork, and can be employed in using Newton's colour top as devised by Mr. Percival.

During the Congress an extensive optical exhibit, by various well-known firms, was held in the building, and the optophone was demonstrated.

The members dined together on Thursday evening, and the attendance at all the sittings was well maintained.

Reviews and Notices of Books.

BLOCK ANESTHESIA AND ALLIED SUBJECTS.

With Special Chapters on the Maxillary Sinus, the Tonsils, and Neuralgias of the Nervus Trigeminus. By ARTHUR E. SMITH, D.D.S., M.D. London: Henry Kimpton. 1921. Pp. 895. 90*s*.

THIS large volume is intended for oral surgeons, dentists, laryngologists, rhinologists, otologists, and students, but it is to practitioners and students of dentistry that it will make its chief appeal as a text-book. The book opens with a history of general and local anæsthesia and closes with a consideration of post-operative complications and their treatment. The chapters of most importance are those which describe in detail the technique of local anæsthesia of the branches of the fifth cranial nerve; the methods of nerve-blocking each branch are discussed systematically and very fully under such headings as Topography of Anatomy, Needle Employed, Technic of Injecting Structures Anæsthetised, &c., with the object of enabling the practitioner to find at once full details of the particular part on which he is working. The numerous illustrations of these sections are for the most part of considerable practical value, and a great deal of labour has been expended on their preparation. There is a detailed and accurate account of the anatomy of the nerves of the face, mouth, and neighbouring regions, with excellent photographs of dissections and diagrams which show every branch from several aspects.

The rest of the book gives a rather lengthy description of a number of matters which are nearly or remotely related to block anæsthesia, including such subjects as a classification of the nervous system, intravenous, intra-arterial, and spinal methods of anæsthesia, and the chemistry of local anæsthetic drugs. Dr. Smith's attempt to leave nothing unsaid is shown by the devotion of some 70 pages to a description of the various drugs that have been used for local anæsthesia, and by the complicated armamentarium of syringes and other instruments that are described and illustrated. The wisdom of giving so much space to allied subjects is open to question, and it may be thought that such detailed accounts as that of the surgery of the maxillary sinus are rather out of place; on the other hand, the treatment of trigeminal neuralgia seems well within the province of the book, and the technique of alcoholic injection has received a full description which should prove of real value to surgeons and neurologists. There are photographs and diagrams excellently reproduced; those which illustrate the anatomy and technique of block anæsthesia are of definite value, but the numerous pictures of simple instruments might well have been omitted.

The statement in the "Foreword" that this is not a book for the timid or for cowards is very true, for the mass of detail makes it rather difficult to read. It is the repetitions, illustrations, and minute descriptions of matters, some of which have little bearing on the main theme, that have made the volume bulky and expensive, and to some extent must counteract the real value of its more practical portions; the latter, however, should prove of great use to the oral surgeon, and the book is likely to be employed as a work of reference by those interested in the many branches of surgery on which it touches.

MANUEL DE COPROLOGIE CLINIQUE.

By R. GOIFFON. With a preface by Dr. J. CH. ROUX. Paris: Masson et Cie. 1921. With 36 figures and 2 coloured plates. Pp. 232. Fr.12.

EXAMINATION of the fæces is probably more neglected than any other aid to exact diagnosis, partly no doubt owing to the fact that the information to be gained from a systematic analysis is not yet fully appreciated. Nothnagel, some 30 years ago,

laid the foundations of a scheme of fæcal analysis, but it is only within the last 10 or 15 years that our knowledge of the physiology of the gastro-intestinal tract has advanced far enough to permit of an intelligent interpretation of the fæcal abnormalities met with in disease. It is now realised that the fæces are not merely food residues which have escaped digestion, but are a complex product derived from the intestinal secretions and bacteria, mixed with derivatives of the food arising from the action of the digestive ferments, and further modified by the activities of micro-organisms and the intensity of the peristaltic movements of the bowel. The analysis of such a mixture presents many difficulties, and the interpretation of the results obtained calls for very considerable skill and experience. The author of the volume under review has had charge of a department dealing with such investigations for many years and is therefore peculiarly fitted to discuss the problem. He does not attempt an exhaustive survey, but confines his attention chiefly to the methods he has found of practical value.

The book is arranged in four parts, of which the first deals with the physiology of the alimentary tract, and although brief, this section is adequate for the purpose in view. In the second part the technique of fæcal analysis is dealt with, and this constitutes the major portion of the work, occupying 130 out of the total of 230 pages. After discussing various test-diets and their respective spheres of usefulness, the author considers the macroscopic and microscopic characters of normal and pathological stools. He then passes on to the chemical reactions, dealing first with the normal and then with the abnormal constituents, including blood. For the detection of the latter he advocates the Kastle-Meyer phenolphthalein reagent as a preliminary test, but he advises that a positive result should always be controlled by Weber's guaiacum test, which he considers shows only a quantity of blood of pathological significance. The quantitative estimations for clinical purposes he limits to determinations of the dry weight, the volatile fatty acids, the total nitrogen, the ammonia, the fats, and the bile pigments, particular stress being laid upon the measurement of volatile fatty acids and ammonia as an index of the type of intestinal flora. The commoner intestinal parasites are considered and adequately illustrated in this section, which also includes an account of the digestive ferments met with in the fæces. The bacteria of the stools are dealt with more from a general than a special point of view, but directions are given for the detection of various pathogenic organisms. The interpretation and diagnostic significance of the results obtained are discussed in the third portion of the book, which is divided into twelve sections dealing with the various secretory, bacterial, and motor affections of the alimentary tract.

The final ten pages are devoted to a condensed account of treatment. This is the least satisfactory portion of a book which, as an introduction to clinical coprology, is a work of distinct merit.

DIAGNOSIS OF PROTOZOA AND WORMS PARASITIC IN MAN.

By ROBERT W. HEGNER and WILLIAM W. CORT. From the Department of Medical Zoology, School of Hygiene and Public Health, the Johns Hopkins University. Baltimore: The Johns Hopkins Press. 1921. Pp. 72.

THIS bulletin has been prepared for the use of physicians and public health workers who are called upon to diagnose diseases caused by protozoa and worms. It has been compiled from original articles in periodicals and from standard text-books, and the aim of the authors has been to include only those parasites which are of practical importance to the medical man. It is clearly written and well illustrated, and should prove of value to those for whom it is intended. Adequate references are given to the literature of the subject.

THE POLARISED MICROSCOPE.

Die Ultra- und Polarisations-Mikroskopische Erforschung des Lebenden Auges und ihre Ergebnisse. Von Dr. LEONHARD KOEPPE. Leipzig: E. Bircher. 1921. Pp. 270. Fr.20 (Swiss).

IT is some ten years since the application of a specially designed microscope, used as an ophthalmoscope of high power, to the examination of the tissues of the living eye was demonstrated by Allvar Gullstrand, at Heidelberg, and taken up in Germany. Among other ophthalmologists Dr. Leonhard Koeppe has specialised in the use of the instrument and has become a large contributor to the literature which has grown up around it. This literature threatens to become over-specialised, and of this tendency the present book affords a striking illustration. It is devoted, as its title suggests, to an extremely small subject—that is to say, the use of this very special instrument with particular appliances for producing dark field and utilising polarised light. That both these expedients are useful may well be believed, but a perusal of Dr. Koeppe's book in itself is not convincing. He speaks of having worked at this phase of the subject for two years past, but he brings forward no results, and, indeed, the most striking feature of the book is the complete absence of clinical demonstrations. It is written much in the style of an elaborate manufacturer's catalogue, containing a detailed and well-written description of the instrument and a full technical account of the method of its use. This is serviceable matter, although of less interest to the general medical reader than would have been an account of results obtained by its means.

The bulk of the book is increased by much irrelevant matter. Thus, a very elaborate account is given, by way of introduction to the theory of the instrument, of the researches of Fraunhofer and Fresnel upon the phenomena of diffraction exhibited by extended wave fronts. The matter so introduced is of small value where it stands; it is to be found in all elementary works on physical optics and for the optics of the microscope it has no meaning whatever. Objects viewed by means of a microscope are always viewed in the focus of the instrument, where the image forming wave fronts are all contracted to mere points and the Fraunhofer and Fresnel phenomena disappear wholly. Many years ago the late Professor Abbé, head of the Zeiss firm at Jena, propounded a theory of image formation in the microscope in forgetfulness of this distinction, and on the strength of it ventured a prediction that no optical instrument would ever yield a resolved image of an object having a diameter less than half a wave-length of the light by which it was seen. Some years afterwards details transcending this limit were photographed by means of a lens constructed by the Zeiss firm, and, still later, Lord Rayleigh showed that an ordinary telescope would resolve a grating having an angular magnitude amounting to less than a fourth of Professor Abbé's impassable limit. Of these disturbing facts the author of this work seems to be unaware, since he largely fills his pages with reiterated expositions of this exploded Abbé theory. The book, therefore, is one that needs to be read with critical discrimination, but so read it will repay the attention of readers who are interested to learn what is being done in this branch of ophthalmology.

CLINICAL BACTERIOLOGY AND HÆMATOLOGY.

For Practitioners. Sixth edition. By W. D'ESTE EMERY, M.D., B.Sc. Lond. London: H. K. Lewis and Co., Ltd. 1921. Pp. 310. 15*s*.

THE sixth edition of Dr. d'Este Emery's valuable handbook differs from the last one in only a few minor verbal alterations. It was written primarily for the general practitioner, and the author has wisely refrained from over-elaboration. All the recognised procedures for the laboratory diagnosis

of disease are described, but controversial matter is rigidly excluded; and though the busy practitioner may not be in a position to carry out the actual investigations for himself, he should be able, with this book in his library, to interpret laboratory reports and to view them in their proper perspective. At the same time the scope of the work is sufficiently wide to make it of real help to those specialising in clinical pathology, and there must be few clinical laboratories in which it is not now in constant use.

THE ENDOCRINES.

By SAMUEL WYLLIS BANDLER, A.B., M.D., F.A.C.S., Professor of Gynæcology, New York Post-Graduate Medical School and Hospital. London and Philadelphia: W. B. Saunders Company. 1921. Pp. 486. 35*s*.

Professor Bandler is an enthusiast. To him the endocrine glands have an importance far beyond that up to now assigned to them, and the development and functional activity of the various structures of the body, the psychoses and neuroses, normal and abnormal, are all under their dominance. In fact, the effects of heredity and environment, racial and sexual differences, and temperamental divergences, can be appreciated only by an understanding of endocrine activity and inter-relation. The early chapters of his book are thus devoted to a general discussion of the influence of heredity and environment on the child, and of the various influences by which the activities of the dominating endocrines may be modified. As a gynæcologist Professor Bandler is particularly interested in disorders affecting women, and he devotes a large part of his book to a discussion of the normal and abnormal female constitution. His theories are the product mainly of clinical observation and of his experience of endocrine therapy, but are also supported in many cases by operative proof.

This book will appeal primarily to the gynæcologist, but it also deserves a wider circle of readers. The chapter dealing with the endocrine factors involved in puberty and the climacteric is very sound. Professor Bandler shows how early recession of thymus activity determines early puberty, while its persistence delays the onset of puberty. The influence of diminished or increased secretion of the thyroid, anterior and posterior pituitary, suprarenals, and ovaries on the mental and physical activities is elaborately discussed. In regard to the suprarenals, Professor Bandler suggests that the medulla responds to stimuli by translating them into the emotion of fear, whilst the cortex converts them into the emotion of anger, and that the medulla predominates in the female, cortex in the male. Menstruation he likens to a miniature labour, in which the unfertilised ovum is expelled by the influence of the posterior pituitary, just as in normal labour the fœtus is so expelled. He explains the amenorrhœa of pregnancy as due to the production first by the trophoblast and later by the placenta of a secretion controlling the activities of the posterior pituitary and the ovaries. During labour, with the separation of the placenta, this control is assumed to be lost.

Professor Bandler holds decided views on the effect of the placental secretion in the disorders of pregnancy. In eclampsia he believes the post-pituitary to be over-stimulated by the placental secretion, and this, combined with deficiency of thyroid, he considers to be the basic factor in the toxæmias of pregnancy. In this connexion we may note that in this country administration of large doses of thyroid extract in threatening eclampsia is stated to have proved effective in the hands of many practitioners in preventing convulsions and hastening labour. Disorders of the climacteric, sterility, dysmenorrhœa, according to Professor Bandler, are all amenable to endocrine therapy; and his optimism extends even to the view that in a few years' time there will be very little mental disease, cancer, diabetes, or renal disease, for, as they are all due to endocrine aberrations, they will be corrected in their earliest stages by the administration of appropriate glands. Chapters are devoted to the psychoses, phobias, and insanity. The views here, as elsewhere, are speculative. In regard to the therapeutic use of gland extracts the author has apparently little use for parathyroid in neutralising thyroid toxæmias, though many authorities consider it of value; nor does he mention pancreatic extract as an aid in controlling thyroid and suprarenal excess. Recent investigations on the effect of vitamine deficiency in producing failure of gland function is not discussed.

The book concludes with a chapter devoted to clinical cases, illustrating the author's methods of diagnosis and treatment.

JOURNALS.

IN the *Journal of the Royal Army Medical Corps* for May Colonel S. L. Cummins has a paper on tetanus as it affected the British Army during the war, between the dates of August, 1914, and December, 1918. During this period, he tells us, this terrible complication of wounds was controlled by prophylactic inoculation for the first time on record. The cases of tetanus arising in hospitals in England between August and November, 1914, were 163; thereafter antitetanic serum became available for every wounded man, and in a later period, also of four months, January to April, 1918, when fighting was again very heavy. At the later date the British force was ten times the size it had been in the first period, and the number of wounded was greater than the whole British Expeditionary Force that landed in France in August, 1914; yet hospitals in England showed only 90 cases of tetanus. From 7 divisions in 1914, 163 cases arose; with antitetanic serum available for all in 1918, from 70 divisions there arose only 90 cases. Further, in November and December, 1916, 13 cases arose in men suffering from trench-feet. In December, 1916, antitetanic inoculation was ordered for this condition as well as for wounds, and in 1917 only one case of trench-foot was followed by tetanus. Thirteen in two months before, one case in 12 months after prophylactic inoculation had become the rule. The initial immediate dose should be 750 units, or 1500 if wounds are specially severe. Three injections should be given weekly as a following routine, and another when further operative measures are to be undertaken. The case mortality in 1914, as in the old wars, was 80 per cent.; in 1918 it was reduced to 50 per cent. Inoculation delays the onset of tetanus, the delayed cases are less deadly, and, besides, we now hear of cases of merely local tetanus, a mild form of the disease unheard of in our earlier wars. The treatment of wounds by incision and the use of smooth-running motor ambulances also helped. A better prophylactic serum may be obtained in the future, as Captain W. J. Tulloch has been able to distinguish tetanus bacilli into four classes. The serum is not yet proved to be useful in treatment, though some laboratory experiments suggest it may be. An officer writing on the "Field Ambulances," asks that the A.D.M.S. of the division should live in the General's own mess, so that he should get always the earliest hints of movements, and again begs that the transport personnel shall be drawn, not from the R.A.S.C., but from the R.A.M.C. Another letter insists that the trained soldier shall get 30 minutes physical training daily. Without it he tends to become soft and fat by comparison with the hardness and fitness of the recruit.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The Cavendish Lecture will be delivered at the Kensington Town Hall by Dr. Addison, on Friday, June 17th, at 8.15 P.M., and will be followed by the annual conversazione. The subject of the lecture will be the Part of the State in the Prevention of Disease. Members requiring tickets for guests are requested to communicate as early as possible with the Hon. Secretary, Dr. D. G. Rice-Oxley, M.C., 22, Victoria-road, London, W.8.

THE LANCET.

LONDON: SATURDAY, JUNE 4, 1921.

The Dangerous Drugs Regulations.

THE regulations to be issued under the Dangerous Drugs Act, 1920, have been redrafted and are now themselves free from danger, for they will be administered with the willing coöperation of all parties concerned. Thirty-one professional bodies raised objections to one or other point in the original draft—the list begins with the British Medical Association and the Pharmaceutical Society of Great Britain, and ends with the Association of Unregistered Practitioners, Assistants and Animal Castrators—and the Committee appointed by the Home Secretary to consider and meet those objections have now presented the regulations in a form amended so as to cause no inconvenience to doctor, pharmacist, or public which, in the words of the report, "the seriousness of the evil they are designed to check does not justify." The drug habit does not now prevail in this country to the same extent as in the State of New York, but the Committee record their conviction that it does exist and that it might easily grow to serious proportions if not checked in time.

We print on p. 1205 the names of the Revision Committee and the text of the regulations as amended by them. The principal objections were three in number. First, the Pharmaceutical Society asked that the requirement of a prescription should be withdrawn altogether. To this the Revision Committee replied that the only legitimate use which the public can have for narcotic drugs is a medical one and in general the principle of requiring a doctor's prescription must stand. Certain familiar remedies, specified in a schedule, are, however, to be exempt from the operation of the regulations. Thus the employment of Dover's powder, of gall and opium ointment, or of the pill of mercury and chalk with opium, is admittedly unlikely to conduce to drug habit and will therefore not be subject to any new restriction. Cocaine having a more insidious effect, no relaxation is suggested, the Committee rather expressing regret that the Act itself gives no power to control the drug in dilute form. Secondly, it was urged that the loophole afforded by fraudulent copying removed "the alleged protection of what purports to be a medical prescription." To meet this source of evasion, the Committee would have all narcotic prescriptions written on special forms supplied to the doctor by the registrar of births and deaths or other official, in so far as the printed forms now supplied by tens of millions to panel practitioners do not meet the case. Thirdly, the Committee frankly recognised that an exact record of incomings and outgoings in the case of a dispensing doctor or chemist could not be required—it was not, in their view, even implied in the regulations as first drafted. The doctor's entries in his day-book and the corresponding entries in the pharmacist's poison-book or prescription-book should, they think, be accepted as giving the information required by the Act. The doctor who dispenses his own medicine will, however, be required—on the whole, not unreasonably—to keep a record similar to that already obligatory in the case of cocaine.

A number of minor concessions tend greatly to the smooth working of the Act without sacrifice of any useful principle. Personal administration by a doctor is not to be deemed to be supplying the drugs within the meaning of the regulations. The prescription, while it must contain the name and address of the person for whose use it is meant, need not state the doctor's qualifications or contain the words "Not to be repeated," and it may by special direction actually be repeated on not more than three occasions at intervals to be specified. To meet the needs of medical practice, no prescription for a human patient need be labelled by the dispenser with the amount of narcotic drug contained in it, although the same principle is not extended to veterinary practice, where it is hoped that some nauseous denaturant may be found to prevent the use of animal remedies by human beings. Hospitals and public institutions may be exempted by the Home Secretary from the operation of the regulations under conditions to be determined. The Committee may be warmly congratulated on the attainment of a high degree of unanimity among themselves and the various professional bodies with whom they negotiated. The one and only reservation appended as a rider to the report embodies the pharmacists' objection to dispensing by the prescribing doctor, an objection which the Committee were not prepared to take up at the present time, although "in strict equity" they held there was much to be said for completely separating the functions of prescribing and dispensing.

Glands in the Neck.

THE treatment of tuberculosis of the cervical glands, in common with that of all other forms of surgical tubercle, has been the subject of profound changes of opinion during the last two or three decades. Sir ALFRED PEARCE GOULD, in his recent address at the Middlesex Hospital, describes how, when he was first taught surgery, the view of the best and wisest surgeons was that every surgical interference with tuberculous glands was to be avoided, or at any rate should be limited to the mere opening of large superficial abscesses. A few years later LISTER advocated earlier incision and antiseptic dressing of these tuberculous abscesses; then this method was shown by the Leeds school of surgery to fail because the abscess is usually secondary to a caseous focus under the deep fascia. Later, again, very complete excision was practised, and now, as Sir ALFRED PEARCE GOULD truly observes, "you see little or nothing of any of these operations, but the subjects of tuberculous glands of the neck, who a few years ago occupied a large share of the time of all surgeons to general or children's hospitals, are now sent to the throat departments of these same hospitals, and are submitted to enucleation of the tonsils and eradication of adenoids."

It appears from this and other collateral evidence that timely removal of the tonsils and adenoids in cases of cervical adenitis obviates in many cases the necessity of extensive dissecting operations. Miss E. C. LEWIS, who opened the discussion on tuberculous adenitis on May 10th before the London Association of the Medical Women's Federation, similarly urged the importance of clearing up any infective processes in the drainage area of the glands. At this discussion Dr. ESTHER CARLING cited the striking cases of two young men with masses of

enlarged cervical glands which completely cleared up under an open-air régime made possible by their employment as sanatorium porters. Her experience at the Berks and Bucks Joint Sanatorium, that nearly all cases of glands there do well without surgical intervention, coincides with that of Sir HENRY GAUVAIN, who summarised his results before the Medical Society of London on March 14th,[1] in the case of non-operative treatment of surgical tuberculosis. He has long deprecated any interference with tuberculous abscesses other than mere aspiration, when this becomes desirable on account of tension. Chronic enlargement of the lymphoid tissue of Waldeyer's ring is extremely common among children of school age in this country, about one-third of these children being affected; and of 170 cases of hypertrophied tonsils examined by Dr. DAN MCKENZIE, in only three cases could no enlarged glands be felt in the neck. A slight degree of cervical adenitis is therefore a very frequent occurrence, being secondary in a large proportion of cases to enlargement of the tonsils; and this enlargement is doubtless usually the result of infection. The tonsil is chiefly a lymphatic gland, and its drainage area includes the nasal passages and naso-pharynx, infection of these regions being the probable cause of its enlargement; and it is now generally agreed that enlarged tonsils are seldom found in children in the absence of adenoids, but that adenoids are often present without definite tonsillar hypertrophy.

By no means all enlarged cervical glands are tuberculous, many being cases of so-called simple inflammation, but the proportion is difficult to estimate; the majority of cases of great enlargement and of chronic suppuration are tuberculous, and it is probable that simple septic glands are liable in time to become infected by tubercle bacilli passing through the tonsils, which may or may not themselves show evidence of tuberculous deposit. A. P. MITCHELL[2] found histological evidence of tuberculosis of the tonsils in 37·5 per cent. of 64 consecutive cases of tuberculous disease of the upper cervical glands, and in 6·5 per cent of 90 children who showed no evidence of tuberculosis. It is important to note that this tuberculosis of the tonsils is truly latent; the tonsils are pale, not ulcerated, and often quite small, as was pointed out by A. D. FORDYCE and E. W. G. CARMICHAEL.[3] Therefore, as it is probable that in tuberculosis of the cervical glands the portal of entry is usually through the tonsil, and as it is impossible by clinical examination to exclude tuberculosis of this organ, the wise course is to remove the tonsils in all such cases, even though they do not appear to the eye to be unhealthy. After this operation the child should be placed under the best possible hygienic conditions for several months, when in most cases the glands will have so far subsided as to render their removal unnecessary, and in other cases a much smaller dissection will be required than appeared at first to be indicated. Whether we can go back still another stage and by means of proper nasal hygiene avoid the tonsillar infection is a question that deserves attention. Nasal drill is coming to be regarded as a fundamental element in anti-tuberculosis work among children. At least 80 per cent. of children sent to sanatoriums are found to be imperfect nasal breathers, and the correction of bad respiratory habit is at least as important as an effort to fatten the child.

[1] THE LANCET, 1921, i., 1065. [2] Ibid., 1913, ii., 1620. [3] Ibid., 1914, i., 23.

Potent Impurities in Anæsthetics.

EXACT research has made havoc of current notions regarding the action on the body of certain well-known drugs. It is not long since the Advisory Committee appointed by the Liquor Control Board published the disconcerting conclusion that the influence of alcohol on the human nervous system is sedative rather than stimulant, the effects usually interpreted by the consumer as evidence of stimulation being actually due to the removal of control exercised by higher nervous centres. Acceptance of this generalisation need not, however, preclude the devotees of whisky and claret from ascribing particular virtues to the ethers and essential oils which accompany the pure alcohol content. From the year 1846, when JACKSON and MORTON introduced ethylic ether as an adjuvant in surgery, this drug has been regarded essentially as an anæsthetic agent. It is true that as such it has not satisfied all reasonable demands, for nitrous-oxide gas has been extensively used to supplement induction of anæsthesia and various admixtures of chloroform to carry on in the later stages. But no doubt existed that the narcotic effect was due to the action of pure ethylic ether. CUSHNY states in the sixth edition (1915) of his Text-book of Pharmacology that ether seldom contains impurities of importance, although when exposed to air and sunlight it may contain acetaldehyde and peroxide bodies, rendering it more irritant to mucous surfaces.

Four years ago Dr. J. COTTON of McGill University claimed[1] to have discovered extraneous substances in the anæsthetic ether of commerce, one group favourable to the production of anæsthesia, which he termed synergists, and a second group of undesirable impurities responsible for mucous irritation and post-operative nausea. On his initiative an anæsthetic ether was put on the American market with certain impurities removed and with the addition of 2 per cent. by volume of ethylene, half a volume of CO_2 and 1 per cent. by weight of ethylic alcohol. Dr. J. E. LUMBARD of New York City went on to show[2] that the purest ethylic ether he was able to produce possessed almost contemptible anæsthetic properties. This sample assayed 99·8 per cent. pure ethylic ether, the remainder being water, and Dr. LUMBARD states "it was actually impossible to get a really satisfactory degree of surgical anæsthesia with it, in spite of any increased amount administered." And now, in the paper by Dr. R. L. MACKENZIE WALLIS and Mr. C. L. HEWER in our present issue, the myth of anæsthetic action is apparently finally laid, ether becoming merely a convenient vehicle for administering certain potent anæsthetic substances present in it in small quantities as impurities.

The main outcome of this work of WALLIS and HEWER has been to show that most of the harmful effects of ether—and it may be added, parenthetically, of chloroform—are due to the impurities which they contain. In the case of ether the chief irritants are aldehydes and mercaptans, and when these are removed the ether is freed from any harmful effect in some respects. Further purification, they found, removed not only the irritants, but some compounds essential for anæsthesia, the remaining pure ether having an intoxicant rather than an anæsthetic action. Finally, the anæsthetic effect was discovered to be due to the presence of ketones in small quantities, and the subsequent re-addition of these ketones to

[1] Jour. Canad. Med. Assoc., September, 1917.
[2] Amer. Jour. of Surg., Anæthesia Supplement, 1920, xxxiv., 118.

the purified ether resulted in the production of a good anæsthetic mixture, free from irritant effect and almost odourless. Should further experience confirm these observations they open up a wide field for investigation, and the new product has been supplied to anæsthetists with the object of ascertaining its true value under a variety of conditions. It may be that other drugs, particularly organic chemicals, owe their main action to impurities contained in them. Thus we know that salvarsan contains sulphur in small amounts, although we do not yet know the significance of this sulphur. Differences in therapeutic effect have been observed between natural and synthetic sodium salicylate. It seems not impossible that the specific action of salicylates may be due largely to impurities; hence the necessity of giving large doses to obtain the necessary therapeutic action. Many naturally occurring organic compounds are found to be more efficacious than those synthetically prepared. All this suggests the continued need of curiosity into the active ingredients of drugs about which we were prone to regard our knowledge as complete.

THE BUFF BOOK AND THE G.M.C.

AT the February meeting of the Executive Committee of the General Medical Council the question of the insertion of the names of medical and dental practitioners in the Buff Book (being a classified commercial telephone directory for London) was under consideration, and a resolution was passed to the following effect:—

> That the insertion of the name of a medical practitioner for payment, whether with or without typographical display, in a list issued to the public, and purporting to be a list of local medical practitioners, which is not open to the whole of the profession without such payment, is not in accordance with professional standards in respect of advertising, and might be held to bring a practitioner so advertising himself within the terms of No. 5 of the Council's warning notices.

So much is, or should be, familiar to our readers. The Council's Registrar has now received a communication from the secretary of the Law Society, in which he says that he "understands that all professional men are now being admitted free of charge, provided their names are printed in small type, but that the Buff Book is not making any hard-and-fast rule that a professional man's name shall appear only in small type. They will print him in any size type he likes provided he pays for it. The Council of the Law Society, however, still feel an objection to solicitors inserting their names at all in the Buff Book, and the objection is based upon this, that some solicitors have no telephone, and that a classified list of solicitors in the Buff Book might give an undue advantage to those who have. This objection does not attach to the ordinary telephone book where names are in alphabetical order, and there is no classification."

We understand that, although no further action was taken by the General Medical Council at its recent session, the attitude of the Council remains as stated in the resolution of its Executive Committee. Should a complaint be lodged against a practitioner in regard to this matter it might be necessary for him to appear before the Council.

HARVEIAN SOCIETY OF LONDON.—The annual dinner of this society, as already announced, will take place at the Café Royal, Regent-street, on June 22nd, at 7.30 P.M. (for 7.45 P.M.), with Dr. G. de B. Turtle, the President, in the chair. The price of the dinner is 12*s.* 6*d.*, exclusive of wines, and this amount will be collected by the secretaries at the entrance. It is hoped as many members as possible will attend. Those who intend to be present are asked to communicate as soon as possible with the hon. secretaries of the society, 81, Cambridge-terrace, Hyde Park, W.

Annotations.

"Ne quid nimis."

THE WAR AND INDUSTRIAL UNREST.

AT the Royal Society of Arts on May 26th Dr. C. M. Wilson read a paper dealing with Some Effects of the War on Industrial Unrest. The avowed purpose of his paper was to supply an analysis of the present mood and temper of labour, rather than to provide a cut-and-dried solution of problems of industrial unrest. He maintained that in the endeavour to allay that unrest little help is to be obtained from a study of existing institutions; we must rely mainly upon a consideration of human nature, as being the only constant in the problem under review. The difficulties of this task are not made lighter by the practical absence of a labour press in which currents of political thought can be traced. At the outset of the problem lay the necessity of distinguishing the case of the man who saw active service from that of the man who remained at home. Many of the causes of unrest are older than the war, but the mood in which labour is advancing its solutions of these problems is mainly a by-product of the four years of war. We must realise the importance of examining that mood with sympathy and understanding, for it is the outcome of trench experiences. In the later years of the war the "cooking" of war news before it was served up in the press in England was a prime factor in unsettling opinion in France; scepticism marked a decline of confidence in leadership and authority. Examination of the history of the transfer of power from the few to the many since the Reform Act of 1832 demonstrates that it was mainly attributable to the pressure of economic grievances. Abstract theories of natural rights carry little weight without such grievances; the causes of disillusionment in the trenches having no economic basis might therefore appear transitory, but we must be cautious in accepting that interpretation of them, not only because of their intensity and widespread distribution, but also because they are still in operation. The men in the trenches were gradually taught to use new standards in judging men; they are now asked to revert to older standards, associated with "getting on in life," which they had found in the trenches to be artificial standards. With that caution, we can perhaps accept the fact that the real motive force to-day is not political but economic, and that the mass of the people simply want to better their conditions. It is important to meet this wish up to the very limit compatible with the industrial state, because history tends to show that the people will only welcome sudden and sweeping changes if they have solid grievances. It must also be remembered that in handling those who saw active service we are often dealing with men rendered abnormal by the ordeal of modern warfare—men who underwent a change as part of a defensive mechanism set up to meet the environment of the trenches. This defensive mechanism tended towards apathy and what at first sight appeared to be indolence, and this may account for diminished production on the part of workmen at the present time. There is also to be considered the effect of monotony on men both during the war and in their present work, which tends to exaggerate the state of mind resulting from trench life. It is essential that the existing temper of labour be understood before remedies are advanced. Men in the mass are more critical as a result of the war, and less inclined to believe in the infallibility of the press. They have been prepared by the war for an appeal based on something higher than self-interest. This is *the* opportunity of the war, and it has not been taken. The ineffectiveness of words in an atmosphere of suspicion is becoming increasingly obvious. The

methods of the old regular army in handling men merit consideration. The so-called indiscipline of labour is not a fact but a prejudice. The influence of lack of security is of the greatest importance in precipitating strikes: this influence is a symptom of the instinct of class preservation only to be removed by the erection of machinery for settling trade disputes in which labour really believes. The conditions of contentment are partly material and partly moral. There is no danger of the material factors being overlooked at the present day, but there is a danger of the moral factors which constitute the basis of contentment being neglected. In the past the essentials of leadership have been laid down by feudal conditions. It was Dr. Wilson's forcible plea that these essentials must now be reviewed in the light of the attributes of leadership required in an industrial state.

THE TYPHUS EPIDEMIC IN SERBIA IN 1915.

A MODEST volume[1] of 273 pages recently published contains a whole epic of human tragedy in a faithful, unvarnished account of the awfulness through which distracted Serbia lived during 1915. The epidemic of that year was one of the most severe that the world has known in modern times; it not only interrupted and suspended for approximately six months all important military activities of the Serbian army, but it also delayed the military advance of the Central Powers. During the height of the epidemic the number of new fever cases entering the military hospitals alone reached 2500 per day. How many more unreported cases actually occurred one will never know. The mortality varied between 30 and 60 per cent., and in complicated cases reached 70 per cent. Over 150,000 deaths occurred within six months before the epidemic could be suppressed, and coincident with the typhus there occurred an epidemic of relapsing fever. There were only approximately 350 Serbian doctors in the country prior to the outbreak. The majority of this small number sooner or later became afflicted with the disease, 126 succumbing, a mortality of 36 per cent. In an institution originally reserved for surgical cases, with 400 beds, there were approximately 1600 patients, 1100 of which were suffering from typhus. Of a hospital staff of 42 only three escaped the disease. There were no lavatory or bathing or toilet facilities; no nurses; and often only a few Austrian prisoners as attendants. Prison camps were veritable death-traps. Over one-half of the 70,000 Austrian prisoners in Serbia died of typhus during the epidemic. Uskub was a veritable valley of the shadow of death; tired nurses on leaving the crowded hospitals for a little fresh air and exercise were met by a long procession of bullock wagons carrying rude coffins to the cemetery. Sometimes three coffins with unfastened lids rested on the same cart, exposing the bodies of the dead. Of the six surgeons attached to American hospital units two died. Lice were ubiquitous; even the linen brought back from the laundry was not free from vermin. For some time not a single hospital possessed a steriliser. The account of the preventive measures used, now familiar to English readers, is instructive. It had been argued that in order to exterminate typhus from Serbia it would be necessary to raise the standard of living of the whole Serbian people, and entirely to change their habits—a work of years. But owing to the heroic efforts of the American and English commissions, with the coöperation of the Serbian people, the epidemic was not accompanied by starvation and famine, and after six months' intensive labour was entirely eradicated. The habits of the people even now show but little permanent change. In order to cope with the epidemic it became necessary to improvise apparatus for disinfesting and bathing on the spot: the majority of centres did not attain a high standard of efficiency, but usually served their purpose in destroying lice and their ova. Experience demonstrated that highly perfected steam machines were not absolutely essential for overcoming such an outbreak.

The discovery of the Rickettsia bodies, and the series of experimental investigations by different observers which led to their general acceptance as the cause of typhus fever, trench and Rocky Mountain fever, make an interesting story, of which a good account is given by Dr. Strong and his colleagues. The bodies were discovered by Ricketts in guinea-pigs and monkeys injected with blood from Rocky Mountain fever cases, and were also demonstrated in the body of *Dermacentor venustus*, as well as in the ova of infected ticks. In 1910 Ricketts and Wilder observed similar bodies in the blood of typhus fever cases in Mexico, and in 1913 this discovery was confirmed by Prowazek in Belgrade, while Sergent, Foley, and Vialatte in the following year observed similar organisms in infected lice during their experiments in the louse transmission of typhus in Algiers. Rocha-Lima and Prowazek confirmed these discoveries in Germany in 1916, and demonstrated similar bodies in the intestines of lice on the fourth and fifth days after feeding them on typhus blood; in the same year Wolbach in Wyoming found Rickettsia bodies in the capillary endothelial cells of guinea-pigs injected with Rocky Mountain fever blood. From 1917 onwards research was directed towards the discovery by Toepfer, Munk, and Rocha-Lima of similar bodies in the blood and infected lice from cases of a remittent fever, first described as Volhynia fever, but now more generally known as "trench fever." In 1918 Arkwright, Bacot, and Duncan definitely proved the association of these bodies in the fæces of infected lice with the production of trench fever in man. Finally, in 1918, Kuczynski demonstrated the Rickettsia bodies, now known as *Rickettsia prowazeki*, in the petechiæ of the typhus rash, and in the endothelial cells of the capillaries of the liver and other organs, work which has since been confirmed by Wolbach and Todd in the recent Polish epidemic. This, then, very briefly is the outline of the story of the discovery of the long-sought-for cause of typhus.

[1] Typhus Fever, with Particular Reference to the Serbian Epidemic. By Richard P. Strong, George C. Shattuck, A. W. Sellards, Hans Zinsser, and J. Gardner Hopkins. Published by the American Red Cross at the Harvard University Press, Cambridge, Mass. 1920. Pp. 273.

THE SULPHUR CYCLE, OXIDATION OF SULPHUR BY MICRO-ORGANISMS.

AMONGST the many observations and meditations of Hamlet not the least interesting are those on the mutability of matter. "A man may fish with a worm that hath eat of a king; and eat of the fish that hath fed on that worm," the reflex of that speculation addressed to Horatio: "Why may not imagination trace the noble dust of Alexander, till he find it stopping a bunghole." What even the vivid imagination of Shakespeare himself portrayed is outbid by the achievements of a microscopic cell or by infinitesimally small, lowly bacteria. The small things of the world confound and transform the complex and the mighty. To trace the cycle of a single chemical element in the round of Nature is both a romantic and singularly useful occupation. The latter aspect may be illustrated by the production of free organic acids—acetic, butyric, lactic—by specific micro-organisms, or by mineral acids the products of animal cells, or by micro-organisms. One of the gasteropods contains so much pure sulphuric acid in its saliva, that when it falls on a marble floor it causes effervescence. Again, in the whole round of the vertebrates free hydrochloric acid is always present in gastric juice. It is interesting to note that parotid saliva—alone of all the secretions poured into the mouth—contains an organic compound of sulphur, the sulpho-, or thio-cyanide of potassium, while the bile contains sulphur in its taurin, and every hair or epithelial cell when shed removes in the keratin a certain small amount of

sulphur. The liver cell has the remarkable power of fixing organically certain sulphur combinations, which are excreted in the urine. There is, however, a group of microbes which deal specially with sulphur compounds by way of oxidising the sulphur. Winogradsky many years ago was the first investigator definitely to demonstrate the rôle of microbes in the oxidation of H_2S, and of the latter to H_2SO_4. Only about thirty years after, Keil isolated these two organisms—*Beggiatoa* and *Thiothrix*. They never turned the medium acid; this was explained by the presence of sufficient $CaCO_3$ in the culture to neutralise any acid formed. There are various groups of sulphur-oxidising bacteria: the two forms above mentioned accumulate sulphur within their cells. Other forms—*Thiobacillus denitrificans* is anaerobic, deriving its oxygen from the decomposition of nitrates, and *T. thioparus*, which oxidises thiosulphates, H_2S, and S—do not accumulate sulphur within their cells, but produce abundance of sulphur outside their cells and cause the medium to become distinctly acid. Mr. Selman A. Waksman and Mr. J. S. Joffe, of the New Jersey Agricultural Experiment Station, New Brunswick, have isolated another group of bacteria, closely allied morphologically to the latter group, which do not act upon thiosulphates and H_2S, but act only upon elementary sulphur, and allow the medium to become very distinctly acid. They were isolated from certain composts by means of a purely inorganic culture-medium, consisting of minerals, with elementary sulphur as the only source of energy. These organisms are very remarkable, are autotrophic, and do not need any organic substances for their development, the carbon being supplied from the CO_2 of the air. The sulphur is oxidised very rapidly with the production of sulphuric acid. In the presence of the proper neutralising agents, salts or acid salts are formed which tend to make the medium less acid. The noteworthy thing about this group of bacteria is that they produce a more acid zone than the final acidity of the majority of acid-producing bacteria (lactic, acetic, &c.) and yeasts, and they produce a greater concentration of acids and remain alive in that acid medium. The authors' object is the production of acid at such a rate and under such conditions that it should transform insoluble tricalcium phosphate into soluble phosphates and phosphoric acid, the insoluble phosphates being used as neutralising agents But the whole story of the rôle of sulphur in bacterial life remains to be told.

SUNSHINE, SLEEP, AND HEALTH.

THE medical department of the Board of Education has just issued to local education authorities a circular (No. 1215) which institutes an inquiry into the operation of the Daylight Saving Act in regard to any injurious effect upon the health of school children. The report of the Summer Time Committee in 1917 showed that in Scotland 80 per cent., and in England 46 per cent., of education authorities reported no evidence of curtailment of sleep as a result of the alteration of the clock face. The high percentage of negative answers from Scotland, where summer daylight is normally more prolonged than in England, is a testimony to a higher standard of parental control and sense of responsibility north of the Tweed. Southron parents must learn to understand that children of school age should not be kept out of bed until dark. Education authorities might usefully draw the attention of parents to the paramount necessity of sufficient rest in bed for young children. The mere fact of their not sleeping at the beginning and end of bed rest is of no great importance. All young animals naturally sleep less in summer than in winter; there is less demand on metabolism in warm weather and consequently less need for sleep. Children have always been kept out of bed later in the summer than in the winter time, and the fact has been a source of lament to teachers for generations. But they are apt to forget this periodicity and to put down to the Daylight Saving Act what is a yearly occurrence. Statistics show that more children die of winter than of summer ailments, and there can be little doubt that the prolonged sunlight of early summer is even more beneficial to growing children than it is to adults.

THE PATHOLOGY OF HYDROCEPHALUS.

THE researches of Mr. W. E. Dandy, of the Department of Surgery of the Johns Hopkins Hospital, have revolutionised as well as simplified our knowledge of the pathology of hydrocephalus. In 1913, in conjunction with K. D. Blackfan, he showed that any lesion which occludes the ventricular system will always produce stasis of fluid and dilatation of the ventricles proximal to the obstruction, but will not change the size of the ventricles distal to it.[1] In a recent paper[2] he has shown that the cause of the other form of the disease—communicating hydrocephalus—i.e., the form in which all the ventricles are in communication with the subarachnoid space, is similar. In studying the absorption of cerebro-spinal fluid in hydrocephalus, Dandy and Blackfan found that in the communicating form absorption from the subarachnoid space is greatly reduced. This suggested reduction in the amount of absorption space. Later, in cases studied at necropsy, adhesions were found which obliterated the cisternæ. Hence it was assumed that, by preventing the cerebro-spinal fluid from reaching the great absorption spaces over the cerebral hemispheres, these adhesions caused hydrocephalus. This was proved by experiment. An obstruction of the cisternæ may be demonstrated in two ways—after death and during life. If a coloured suspension is injected into the spinal canal before making a necropsy the colour will reach but not pass an obstruction in the cisternæ. The cause of communicating hydrocephalus may also be shown by its experimental production. In dogs the mesencephalic cisterna was blocked by surrounding the midbrain with a piece of gauze saturated with iodine. Shortly before necropsy a suspension of Indian ink was substituted for an equal amount of cerebro-spinal fluid, which had been aspirated from the cisterna magna through a puncture in the occipito-atlantal membrane. When Indian ink is introduced into the spinal canal of an animal with intact cerebro-spinal spaces, the colour will find its way to every point of the subarachnoid space over both cerebral hemispheres. But in animals with the perimesencephalic barrier the passage of the ink is abruptly terminated there, and none reaches the hemispheres. Further, hydrocephalus develops and the foramina of Luschka and Magendie become so dilated that a retrograde flow of ink takes place into the cerebral ventricles. In one case of communicating hydrocephalus the opportunity arose of verifying this fact in man. The colour was introduced post mortem by gravity for 15 to 20 minutes—pressure was not used for fear of rupturing delicate adhesions. The colour filled the cisternæ, even the cisterna interpeduncularis, and covered the cerebellar subarachnoid spaces, but failed to reach the cerebral hemispheres. On the other hand, the ink passed freely into every part of the cerebral ventricles, for the foramina of Luschka and Magendie were widely open. The cerebro-spinal fluid circulates in a mesothelial-lined vascular system just as definite as the blood vascular. The cerebral ventricles are concerned only with the production of cerebro-spinal fluid, and the spaces on the exterior of the brain (subarachnoid) normally only with its absorption. The fluid passes from the former to the latter through the foramina of Luschka and Magendie. Hence when these are obstructed hydrocephalus of all the ventricles is produced. But in communicating hydrocephalus they are open and the fluid

[1] Jour. Amer. Med. Assoc., 1913, lxi., 2216.
[2] Bulletin of the Johns Hopkins Hospital, March, 1921, 67.

reaches the cisterna magna and then passes under the medulla, pons, and midbrain to the cisterna interpeduncularis and chiasmatis, whence it is distributed to the cerebral sulci, where it is absorbed. It has been shown experimentally that about three-fourths of the cerebro-spinal fluid is absorbed in the subarachnoid spaces of the brain and the remainder in the spinal subarachnoid space. An obstruction in the cisternæ under the medulla, pons, or mesencephalon will produce hydrocephalus just as effectually as a block in the aqueduct of Sylvius. An interesting method of demonstrating during life an obstruction in the subarachnoid space has been devised. By lumbar puncture 30 to 60 c.cm. of fluid are removed and an equal volume of air is substituted. If there be no obstruction every part of the subarachnoid space will be visible in a radiogram; the cerebral sulci will be seen as a network. If hydrocephalus be present it cannot be of the communicating form. But if air is absent in the sulci an obstruction must exist in the subarachnoid space.

LEGALISED CHILD ADOPTION.

THE Committee appointed last August by the Home Secretary to consider the desirability of making legal provision in this country for the adoption of children has just brought in a very practical and serviceable report.[1] Soon after getting to work a brief interim report was issued recommending immediate amendment of the law so as to secure the legitimation of children born out of wedlock by the subsequent marriage of their parents. An enactment to this effect, which has already been embodied in a Bill read a second time in the House of Commons, would secure the rights of one considerable group of unfortunate children. The present report proposes two further alterations in the law, both urgent. First, an Act to give legal recognition to the adoption of children under the judicial sanction of county courts, securing both for adopter and adopted child similar rights and duties to those obtaining between natural parents and their children. Such an enactment would give to the adopter that protection which has heretofore been so sadly lacking. Parents who have habitually neglected a child, and left it to be brought up by relatives or strangers, are all too ready to claim it again on reaching the wage-earning age. Such a catastrophe has occurred to many adopters and deterred others from adopting. The second recommendation is an amendment of the Children Act, 1908, whereby so-called adoptions which do not receive formal legal sanction should be notified and properly supervised. Here the provision would be for the protection of the child, for whom in many cases a monetary consideration has arisen. When these three questions have been dealt with by separate Acts the Committee recommends the reconsideration of the whole legislation relating to children with a view to amendment and consolidation. The personnel of the Committee, which has discharged so wisely and quickly its civic duties, consists of Sir Alfred Hopkinson (chairman), Mr. Neville Chamberlain, Hon. Lady Norman, Mrs. C. E. B. Russell, Mr. J. H. Seddon, and Mr. T. W. Sherwood. We are grateful to them, and trust that Parliament will lose no time in setting the seal upon their labours.

THE EPIDEMIOLOGY OF THE MENINGOCOCCUS.

ONE of the most illuminating and suggestive papers hitherto published on the peculiarities of the meningococcus has recently appeared under the signatures of Prof. O. Thomsen and Dr. Ferdinand Wulff of the Serum Institute in Copenhagen.[2] The starting-point of their theories would seem to be the observation that in no case has more than one type of meningococcus been found at the same time in the naso-pharynx of a "carrier." Interpreting this observation as a sign of mutual antagonism between the different types of meningococcus, the authors make the interesting suggestion that, with regard to the meningococcus at any rate, there are two totally different kinds of immunity. The one is due to the antibodies present in the blood and, to a less extent, in the secretions of the naso-pharynx. The other is due to the "carrying" of harmless or comparatively harmless types of meningococcus which allow no foothold for a virulent type. This second kind of immunity is, in the authors' opinion, the chief factor which renders long service soldiers comparatively unsusceptible, while recruits seem to be peculiarly susceptible. Under the often overcrowded conditions of military service, both avirulent and virulent types of meningococcus are frequently to be found in the naso-pharynx, and in the case of a recruit who joins an old draft of soldiers, there is a race between the avirulent and virulent types. If the latter reaches his naso-pharynx first, and if his concentration of antibodies is low, he falls ill or, if his concentration of antibodies is high enough to prevent serious blood infection, but not high enough to prevent lodgment in the naso-pharynx, he becomes a "carrier" of this type and is a serious danger to his fellows. The authors describe an epidemic of cerebro-spinal fever among recruits lodged in barracks, one side of which was much more damp and dark than the other. Soon after the outbreak every soldier was examined, and the "carriers" of the virulent type A (which appears to be totally distinct from the virulent types identified in this country) were isolated and the epidemic was checked. An instructive feature of this investigation was the discovery that, though the soldiers were equally divided between the two sides of the barracks, many more harboured meningococci on the dark and damp side than on the other, the actual figures being 22 to 9. Similar observations have been made by Danish army surgeons in earlier years, and the authors suggest that the explanation for this phenomenon is to be found in the lowered resistance of the body to infection induced by darkness and other unfavourable atmospheric influences. The authors translate their hypotheses into certain recommendations on behalf of recruits in their relations with old service men who may prove to be "carriers" of the dangerous type, and it appears from a note in *Hospitalstidende* for March 2nd that these recommendations have already been adopted by the Danish army authorities.

THE PNEUMOCOCCUS AND STREPTOCOCCUS IN RELATION TO INFLUENZA.

THE current number of the *Edinburgh Medical Journal* contains a valuable report on this subject made by Dr. W. R. Logan to the Medical Research Council. The plan of investigation adopted was to examine cases of (1) pure influenza in their earliest stage of illness, and (2) pulmonary complications in the more advanced stages of the disease. In the early cases where there was no sputum the material was obtained from the naso-pharynx by means of a swab, whilst in the later pulmonary cases sputum was available for examination. All the cases were obtained during the influenza epidemic in Edinburgh from November, 1918, to February, 1919. Dr. Logan examined 44 cases of pure influenza and 64 cases of pulmonary complications. From 13·6 per cent. of the former and 78·1 per cent. of the latter pneumococci were obtained, and from 100 per cent. of both groups streptococci were obtained. In differentiating the pneumococcus from the streptococcus the bile solubility test was used as the final arbiter of distinction. Thirty-four pneumococcal strains were examined as to type on the well-known lines of work of the Rockefeller bacterio-

[1] Report of the Committee on Child Adoption. Cmd. 1254. H.M. Stationery Office. Price 2*d*.
[2] Hospitalstidende, 1921, vol. lxiv., Nrs. 2 and 3.

logists, and 26 strains of Type IV. obtained. Nearly all these Type IV. strains were virulent to mice, whilst their cultural characteristics strongly suggested that in reality they were different strains. An attempt to subdivide them by means of serological and fermentation tests proved unsuccessful. Dr. Logan very wisely concludes that Type IV. is not a type at all, but merely a heterogeneous collection of strains which do not fall into the grouping of Types I., II. and III. In the absence of satisfactory agglutination tests for streptococci Dr. Logan used the hæmolytic test as the best means of differentiation. Non-hæmolytic streptococci having the morphological and cultural characteristics of saprophytic streptococci largely predominated, but 11 strains from 8 cases were found to be definitely hæmolytic and were virulent to mice. Several interesting questions naturally arise as the result of Dr. Logan's valuable work. Probably the most important is the place in bacteriology which must be assigned to the heterogeneous Type IV. of the pneumococcus group. The predominence of this type in the number investigated is striking, and serves to show how relatively valueless is the ordinary routine bacteriological examination for this organism or group of organisms. Another question, perhaps closely allied, is the high proportion of apparently purely saprophytic streptococci found, as compared with the hæmolytic pathogenic varieties. Clearly we are in urgent need of some more satisfactory means of differentiating the various members of this large unwieldy group of organisms.

In the main Dr. Logan's conclusion as to the bacterial flora of the late influenza epidemic agrees with and supplements the tentative conclusions arrived at by Sir Frederick W. Andrewes in the Report on the Pandemic of Influenza, 1918–19, published by the Ministry of Health last year. More bacteriological material is now to hand than was available when that report was compiled. We note, for example, in the June number of *Medical Science* a considerable number of abstracts from various British and foreign journals dealing with this aspect of the question. Dr. Logan concludes by dividing influenza from the toxin point of view into three stages: "A primary stage when the unknown infecting virus of the disease is apparently *acting* alone, though presumably frequently accompanied by other organisms which may or may not later be able to develop a like activity; a secondary stage, when pathogenic pneumococci and streptococci are active in producing pulmonary complications; and a tertiary stage, when saprophytic mouth organisms may invade the already diseased lung." Probably this is quite as far as we can justifiably go along the road of causation at the present moment, but it is interesting to note how much we have all been shaken in our views of Pfeiffer's *B. influenzæ* during the last four years.

THE JOURNAL OF OBSTETRICS AND GYNÆCOLOGY OF THE BRITISH EMPIRE.

THIS journal appeared for the first time in January, 1902, and the aim of the promoters was to make the journal an impartial and complete record of British work, an exponent of British obstetrical and gynæcological practice, and an encyclopædia of contemporary thought and achievements in obstetrics and gynæcology throughout the world. In this the various distinguished occupants of the editorial chair succeeded admirably. Unfortunately the outbreak of the war and the fact that a large number of the younger men practising obstetrics and gynæcology were called up on active service, and that those left at home were fully occupied in other ways, led to its ceasing to exist for the time being. It is now proposed to revive it, and the first number of Vol. XXVIII. of the new series has just appeared. If the journal is to be a success it must receive the loyal support of all those who practise this branch of medicine, and they must assume the responsibility not only of supporting the new venture financially, but also of helping it by contributing to its columns. The number of young obstetricians and gynæcologists has much increased of recent years, and many new developments have taken place in this department of practice. There should be ample scope for such a journal, and it would be little short of a scandal if sufficient support is not forthcoming not only to keep the journal alive and flourishing, but also to maintain the very high reputation it has had in the past. There are numerous problems awaiting solution both in midwifery and gynæcology, and it is to be hoped that the number of workers in this field of research will be greatly increased. There is ample room for them and no lack of material. The new editors, Dr. Comyns Berkeley and Dr. Eardley Holland, will be happy to receive contributions.

GOVERNMENT SURPLUS MEDICAL STORES.

ENORMOUS stocks of medical and surgical material, instruments, and drugs still exist, and the question has arisen as to the best way in which these large quantities can be most usefully employed. The Disposal Board decided to invoke the assistance of the Joint Council of the Order of St. John and the British Red Cross Society. Sir Napier Burnett, who is the chief executive officer of the Joint Council, considered that it would be wise to collect into one place the stores which were scattered about in every part of the country. This has been done and they have been housed near Shepherd's Bush in a large building in the grounds of the Disposal Board; and there all the instruments and material have been classified and arranged for exhibition. A private view of them was given on Monday last to representatives of a large number of newspapers. A written description can give but a faint idea of the very great quantities that are available; the stores must be seen for their extent to be appreciated. Some idea of the quantity available can be obtained from the statement that the original cost has been estimated to have been about a million pounds. There are over half a million of surgical instruments, and approximately 50 tons of drugs of nearly every variety. 130 million tablets are available, including five million of the famous "Number 9" pill. In view especially of the anxious financial position of the hospitals of this country at the present time it has been resolved to offer these stores to the hospitals at very reasonable prices, and for this purpose they are to be open to view by representatives of the hospitals in rotation; about 100 hospitals are to be invited each day, but nothing will be sold until all the hospitals have had an opportunity of inspecting them, so that in about a fortnight the sales to hospitals will begin. Current will be available for the testing of the X ray apparatus by intending purchasers. It is clear that the arrangements have been devised with the greatest care, and the hospitals will doubtless find this an excellent opportunity of obtaining at a moderate price what they need. Sir Howard Frank, the Commissioner of the Disposal Board, presided at a luncheon held at the Royal Automobile Club after inspection of the stores. He was supported by Sir Arthur Stanley, Chairman of the Joint Council, Sir Napier Burnett, and Major-General Sir L. B. Friend, member of the Disposal Board. Sir Howard Frank, Sir Arthur Stanley, and Sir Napier Burnett explained the mode in which it is intended to dispose of the stores, and they expressed the hope that the arrangements made would be to the benefit of the hospitals, and at the same time would result in a substantial addition to the funds of the Government. The scheme has been carefully thought out, and should work well.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, MAY 24TH.

THE address delivered by the PRESIDENT was reported in last week's issue of THE LANCET. At its conclusion a vote of thanks to the President was carried by acclamation.

Appointment of Committees.

The following committees were appointed:—

Business Committee.—Dr. Norman Walker (chairman), the President, Sir Francis Champneys, Dr. Magennis, Dr. Macdonald.

Pharmacopœia Committee.—The President (chairman), Dr. Caton, Dr. Matthew Hay, Dr. Kidd, Dr. Hopkins, Dr. Norman Walker, Sir John Moore, Sir Norman Moore, Dr. Russell Wells.

Finance Committee.—Sir Norman Moore (chairman), the President, Mr. Waring, Sir James Hodsdon, Sir Arthur Chance.

Dental Committee.—The President (chairman), Mr. Bennett, Sir James Hodsdon, Mr. Waring, Sir Arthur Chance.

Dental Education and Examination Committee.—Sir James Hodsdon (chairman), the President, Mr. Bennett, Mr. Waring, Dr. Adams, Sir E. Coey Bigger, Sir Arthur Chance.

Students' Registration Committee.—Sir Norman Moore (chairman), Sir Gilbert Barling, the President, Mr. Littlejohn, Dr. Mackay, Dr. Kidd, Mr. Sinclair.

Penal Cases Committee.—The President, Sir Francis Champneys, Sir Arthur Chance, Dr. Norman Walker, Dr. Macdonald.

Executive Committee.—The President, Sir Gilbert Barling, Sir James Hodsdon, Dr. Macdonald, Dr. Norman Walker, Sir Norman Moore, Sir Arthur Chance, Mr. Waring, Sir John Moore.

Reports of Finance and Education Committees.

The report of the Finance Committee was then received and approved, after which the chairman of the Education Committee made an oral report to the Council, calling the attention of the Council and of medical schools generally to the changes in the Medical Students' Regulations which had been made since the last meeting, embodying the resolutions adopted by the Council in November. He explained that the examination in the preliminary sciences was intended to be separate and distinct from the preliminary examination in general education; and also informed the Council that the Education Committee had recognised the shortened matriculation examination of the University of London, and also the senior public examination of the University of Queensland, and that these would be inserted in the next published list of examinations recognised by the Council.

Penal Cases.

The Council then proceeded to the consideration of penal cases.

The Case of Frederick Percy Richard Gover.

The Council considered the case of FREDERICK PERCY RICHARD GOVER, registered as c/o Pearce and Sons, 58, West Smithfield, E.C. 1, L.R.C.P. Edin., F.R.C.S. Edin., L.R.F.P.S. Glasg. 1910, who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you were convicted of the following misdemeanours, viz.:—On June 9th, 1916, at the Marlborough Street police court, of being drunk in charge of a motor-car and fined forty shillings. On the same day of driving in a dangerous manner and fined twenty pounds. On Dec. 26th, 1916, at the Tower Bridge police court, of being drunk in charge of a motor and fined two pounds or one month's imprisonment. On the same day of driving a motor-car recklessly and fined ten pounds or one month's imprisonment. On April 9th, 1917, at the Hove Borough police court, of being drunk in charge of a motor-car and sentenced to one month's imprisonment with hard labour and disqualified from holding a licence for six months, which sentence was modified on your appeal to the East Sussex Sessions to one month's imprisonment in the second division, but otherwise affirmed. On Nov. 9th, 1920, at the County of London Sessions, held at the Session House, Clerkenwell, of having caused bodily harm to Mary Ann King by wilful misconduct or by wilful negligence whilst having the charge of a motor-car, and ordered to be imprisoned for three months and to be treated as an offender of the second division.

Mr. Gover attended, accompanied by Mr. Watts, his counsel.

The Council's solicitor, Mr. Harper, laid the facts of the case before the Council. He read a report of the proceedings at the County of London Sessions in November, 1920, and a police report on the case. He also read a report of an inquiry under the National Health Insurance Acts concerning the convictions, and the decision of the Ministry of Health on the report thereon. Mr. Watts then opened the case for the defence. He called Mr. Gover, and examined him as a witness in his own behalf. Mr. Gover answered questions put to him by members of the Council through the chair. The Council's solicitor did not desire to cross-examine Mr. Gover. He put in two petitions organised on behalf of Mr. Gover by panel patients and by the police. Mr. Watts then addressed the Council on behalf of Mr. Gover. The Council's solicitor addressed the Council in reply. This closed the case.

The Council having deliberated on the case in camera, the PRESIDENT announced the judgment of the Council as follows:—

I have to tell you that the alleged convictions against you in the notice have been proved to the satisfaction of the Council. These convictions indicate a habit which is not only discreditable to your profession but may become dangerous to your patients. In order to give you an opportunity of reconsidering your habit in this matter the Council has postponed judgment on the convictions proved against you till the May session, 1922. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren who may be willing, upon written application from the Registrar, to testify by letter, addressed to him for the use of the Council, as to your character and conduct in the interval. You will receive in due course a formal written intimation of what I have just announced to you, and the intimation will specify the date to which I have referred, when you should be present, and should understand that in the event of any further conviction for a similar offence the Council may instruct the Registrar to erase your name from the Medical Register.

On invitation from the chair, Mr. Gover renewed his solemn undertaking to refrain from drink for the rest of his life.

The Case of Clement Thomas Cory Kingdon.

The Council considered the case of CLEMENT THOMAS CORY KINGDON, registered as of 62, Falconroad, Clapham Junction, S.W. 11, M.B., C.M. 1893, M.D. 1905 U.Edin., who had been summoned to appear before the Council on the following charge:—

That, being a registered medical practitioner, you, on Feb. 7th, 1921, signed and gave to one W. McKernon, ex-member of the Australian Imperial Force, a certificate dated Feb. 5th, 1921, that the said W. McKernon was suffering from influenza, and was at present (i.e., on Feb. 5th, 1921) unable to travel, whereas you had neither seen nor examined the said W. McKernon on Feb. 5th, 1921, or at all before Feb. 7th, 1921. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The complainant was the Australian Imperial Force. Dr. Kingdon attended in answer to his notice, accompanied by Mr. Hempson, solicitor to the Medical Defence Union, his solicitor. The Australian Imperial Force, the complainant, was represented by Major F. M. Best, A.I.F., solicitor, of Messrs. J. Galbraith and Best, Australia House, Strand, W.C. 2. The President inquired whether any member of the Medical Defence Union was present. No such member was present. Major Best then opened the case on behalf of the complainants. He called Major E. W. Morris as a witness and examined him as to the truth of his statutory declaration. Major Morris was cross-examined by

Mr. Hempson, and answered questions put to him, through the chair, by members of the Council. Major Best did not desire to re-examine Major Morris. This closed his case.

Mr. Hempson called Dr. Cory Kingdon as a witness, and examined him as to the truth of his statutory declaration. Dr. Kingdon was cross-examined, answered questions put to him by the Legal Assessor and by members of the Council through the chair. Mr. Hempson read statutory declarations as to Dr. Kingdon's good character from Dr. Philip Rashleigh Dodwell, assistant resident medical officer to the Brompton Consumption Hospital, and from Dr. James Smith, deputy medical officer to His Majesty's Prison, Wandsworth.

The Council having deliberated the case in camera, the PRESIDENT announced the decision of the Council as follows :—

I have to inform you that the Council has found that the facts which were alleged against you in the notice of inquiry have been proved to its satisfaction, but that the Council has taken into consideration the evidence as to your previous good character, and your assurance that the certificate was given without due care and thought. In order to give you an opportunity to rehabilitate your character and to prove to the Council that you realise the gravity of your offence, and in particular in regard to the giving of certificates, the Council has postponed judgment till the November session, when you will be required to attend and to produce evidence from your professional brethren regarding your character.

The Council then adjourned.

WEDNESDAY, MAY 25TH.

The earlier part of this day's session was occupied with the hearing of penal cases.

The Case of John Thomas Godfrey.

The Council considered the case of JOHN THOMAS GODFREY, registered as of Royton Hall, Royton, Oldham, M.B., Ch.B., 1917 U.Edin., who had been summoned to appear before the Council on the following charge :—

That being a registered medical practitioner, you were, at the Manchester Assizes, held on Nov. 15th, 1920, convicted of the following misdemeanour, namely, of attempting to obtain money by false pretences and fraudulent conversion of goods and ordered to be imprisoned for three calendar months.

Mr. Godfrey attended accompanied by counsel. The Council's Solicitor laid the facts of the case before it. He read the statement by Detective-Inspector Quayle in regard to the conviction which he put in, and read extracts from the report of the proceedings of the Insurance Acts Committee which inquired into the conviction. Counsel for the defence then addressed the Council on behalf of Mr. Godfrey, and handed in a series of testimonials in his favour, including testimonials from Dr. J. Sinclair McGowan, Mr. Henry Beswick, J.P., chairman of the Royton District Council, Dr. J. Lorrain Smith, Dean of the Faculty of Medicine of the University of Edinburgh, from Mr. Timothy Cusock, parish priest of Royton, from Mr. John Lindley of the Manchester Royal Exchange, and from Mr. Godfrey's schoolmaster at Durban. The Council's Solicitor addressed the Council in reply.

The Council having deliberated on the case in camera, the PRESIDENT announced the judgment of the Council as follows :—

I have to inform you that you, having been proved to have been convicted of the misdemeanour alleged against you in the notice of inquiry, the Registrar has been directed to erase your name from the Medical Register.

The Case of George Ormiston.

The Council considered a report by the Dental Committee on the charge against GEORGE ORMISTON, in regard to whom certain facts had been found. Mr. Ormiston was not present, nor was he represented by counsel or solicitor. Mr. Hugh Atkins, general secretary of the British Dental Association, the complainants, was present. The Registrar read the following report on the case :—

The complaint against George Ormiston having been referred to the Dental Committee to ascertain the facts, the Dental Committee reported as follows :

On May 23rd, 1921, the complainants, the British Dental Association, represented by Mr. Hugh Atkins, the general secretary of the Association, attended before the Committee and were duly heard. The said George Ormiston did not attend before the Committee, nor was he represented by solicitor or counsel. The chairman asked at the opening of the inquiry whether any member of the British Dental Association was present on the Committee. No member of the Association was present. The Committee find that the following facts were established by the evidence :—

The said George Ormiston was registered on Dec. 27th, 1878, as "In practice on July 22nd, 1878." His address in the current Register is 170, Skene-street West, Aberdeen. Up to a recent date there were exhibited at 170, Skene-street West, aforesaid, the following :—

(*a*) On the window in gilt letters the words :—
Dentist : Mr. Ormiston, Mr. Thow.

(*b*) On the front railing a wooden sign with the words painted thereon : Ormiston and Thow.

(*c*) At the side entrance, painted on the stone wall, the words : Mr. Ormiston.

In the *Aberdeen Free Press* of Dec. 7th, 1920, and March 18th, 1921, under the heading "Artificial Teeth," appeared an advertisement "Ormiston and Thow, Surgeon Dentists" (Dec. 7th, 1920), and "Ormiston and Thow" (March 18th 1921), advertising also painless extractions, gas, skilled work and moderate charges at 170, Skene-street West, aforesaid. In the telephone directory of the Aberdeen district dated February, 1921, is the entry : "Central 2601 : Ormiston and Thow, Surgeon Dentists, 170, Skene-street."

Thow, who has never been on the Dentists' Register, was trained by the said George Ormiston as a pupil, and had up to April 28th, 1921, been in his employment for 20 years. The said George Ormiston stated this in a letter to the Registrar, adding that Thow was a most skilful operator and mechanic, and that he, George Ormiston, had been compelled to use his services owing to his own health giving way. In a letter dated May 13th, 1921, from the solicitors of the said George Ormiston, it is stated that he has definitely and finally retired from dentistry practice, and he applies to be allowed to withdraw his name from the Register. The letter adds that the said George Ormiston has withdrawn his name entirely from 170, Skene-street, and that all financial and professional connexion between him and Thow have ceased, with the exception that Thow has only now to pay for the fixtures, furnishings, and material which are identified with the dentistry practice.

In the absence of further information (the said George Ormiston not having been present at the inquiry or represented), the Dental Committee infer that on receipt of the notice of inquiry he parted with his practice to Thow for a consideration, and that this has not yet been fully discharged. The said George Ormiston sent to the Registrar through his solicitors a certificate from George Williamson, M.B. 1886, U. Aberd., dated May 13th, 1921, certifying that he was unable to travel to London on account of physical infirmity, and that he had suffered for some years from heart disease, for 12 months from angina, and for some months from religious melancholia ; that it was extremely unlikely that he could ever work at his profession again, and that for a year he had practically done no work.

The evidence before the Committee consisted of the following documents, viz. :—(1) A statutory declaration by Macbeth Moir Duncan, dated April 19th, 1921 ; (2) and (3) advertisements from the *Aberdeen Free Press* of Dec. 7th, 1920, and March 18th, 1921 ; (4) letter from the said George Ormiston to the Registrar, dated April 28th, 1921 ; (5) letter from Alexander and Wm. Robertson to the Registrar, dated May 13th, 1921 ; (6) certificate of George Williamson, M.B., to the Registrar, dated May 13th, 1921.

The PRESIDENT inquired whether any member of the British Dental Association was present. No such member was then present. In answer to a question from the chair, Mr. Atkins intimated that he did not desire to address the Council on the facts found in the report. The Council having deliberated on the report in camera, the CHAIRMAN announced its decision as follows :—

Mr. Atkins, I have to announce to you that in the facts found in the report of the Dental Committee it has been found that George Ormiston has been

proved guilty of the charges, and the Council has directed the Registrar to erase from the Dentists Register the name George Ormiston.

Yearly Tables and Inspection of Final Examinations.

Dr. NORMAN WALKER (chairman of the Examination Committee) presented the report of the Examination Committee on the Yearly Tables and on the Inspection of Examinations. The Council's Committee state that in accordance with their recommendation adopted by the General Council on June 2nd, 1920, the annual tables showing for 1920 the results of examinations for qualifications primarily admitting to the Medical Register have not been printed. The following analyses of those which concern the Committee have been prepared as usual.

Of the 23 bodies granting primary qualifications, it will be seen that the returns for 1920 are complete so far as they go. The table concerned with higher qualifications calls for no special comment by the Committee. The table dealing with exemptions shows that these are again exceptionally numerous. As before, many of them are directly or indirectly due to the war; others to an increasing readiness to accept the examinations of other bodies.

The inspection of the final examinations is not yet completed. That in medicine is almost finished, but there are still seven bodies to be inspected in surgery and eight in midwifery. It is highly desirable that all these should be completed before November in time for consideration at the autumn session of the Council.

	Medicine.			Surgery.			Midwifery.		
	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected
University of Aberdeen	97	7	6·73	94	26	21·66	49	6	10·91
Apothecaries' Hall, Dublin	3	1	25·00	7	2	22·22	5	3	37·50
Apothecaries' Society of London	45	23	33·82	48	36	42·85	43	41	48·84
*Queen's University, Belfast	63	24	27·59	63	24	27·59	63	24	27·59
*University of Birmingham	14	10	41·66	14	10	41·66	14	10	41·66
† ,, Bristol	4	0	—	6	0	—	4	0	—
,, Cambridge	89	40	31·01	97	77	44·25	97	77	44·25
English Conjoint Board	366	199	35·22	346	304	46·77	427	206	32·54
Irish Conjoint Board	56	37	39·78	46	23	33·33	49	22	30·99
§Scottish Conjoint Board	74	66	47·14	68	86	55·84	77	44	36·36
University of Dublin	50	11	18·03	56	12	17·65	57	21	26·92
* ,, Durham	34	14	29·17	34	9	20·93	34	5	12·82
,, Edinburgh	171	55	24·34	178	76	29·96	175	20	10·25
,, Glasgow	128	98	43·36	131	115	46·75	142	32	18·45
* ,, Leeds	17	6	26·08	17	6	26·08	17	6	26·08
* ,, Liverpool	20	5	20·00	20	5	20·00	20	5	20·00
,, London	164	48	22·64	176	81	31·52	197	60	23·34
,, Manchester	63	14	18·18	46	32	41·02	46	26	36·11
National University of Ireland	121	85	41·26	123	58	32·04	122	57	31·84
*University of Oxford	9	3	25·00	9	3	25·00	9	3	25·00
,, St. Andrews	16	1	5·88	15	3	16·66	14	3	17·65
* ,, Sheffield	1	2	66·66	1	2	66·66	1	2	66·66
,, Wales	—	—	—	2	1	33·33	1	0	

* At these examinations Medicine, Surgery, and Midwifery must be passed at one time.
† Medicine, Surgery, and Midwifery must be passed at one time, except in case of certain old students.
§ Medicine, Surgery, and Midwifery must be entered for at one time.

On June 2nd, 1920, the General Medical Council, by resolution, adopted the following recommendation of the Examination Committee:—

"That the licensing bodies which have not hitherto supplied in their annual return information as to whether they do or do not examine in operative surgery, ophthalmology, and mental disease, be asked to do so in future." (Minutes, 1920, p. 21.)

This resolution was communicated by the Registrar to the bodies concerned. As a result, the information given respecting the examinations held during 1920 is much more complete than that obtained regarding those held in 1919, as the following comparative table will show:—

	1919	1920
Operative Surgery:—		
Bodies giving passes and rejections	4	8
,, stating that it is included under Surgery	3	6
,, ,, that there is no special examination	—	7
,, ,, that there is no examination	—	2
,, not alluding to the subject	16	—
Ophthalmic Surgery or Ophthalmology:—		
Bodies giving passes and rejections	3	9
,, stating that it is included under Surgery	3	3
,, ,, that there is no special examination	1	9
,, ,, that there is no examination	—	2
,, not alluding to the subject	16	—
Mental Diseases:—		
Bodies giving passes and rejections	8	10
,, stating that it is included under Medicine	5	6
,, ,, that it is included under Surgery	—	1
,, ,, that there is no special examination	1	4
,, ,, that there is no examination in the subject	—	2
,, not alluding to the subject	9	—

Appointment of Branch Councils.

The following Branch Councils were appointed:—

Education Committee.—England: Sir F. Champneys, Dr. Howden, Sir Norman Moore; *Scotland:* Dr. Adams, Dr. Russell, Dr. N. Walker: *Ireland:* Sir Arthur Chance, Dr. Coffey, Sir John Moore.

Examination Committee.—England: Sir G. Barling, Dr. Caton, Dr. Macdonald; *Scotland:* Dr. Adams, Dr. Russell, Dr. N. Walker; *Ireland:* Sir Arthur Chance, Dr. Coffey, Sir John Moore.

Public Health Committee.—England: Dr. Dean, Sir G. Newman, Sir T. Jenner Verrall; *Scotland:* Dr. Matthew Hay, Mr. Littlejohn, Dr. McVail; *Ireland:* Sir E. Coey Bigger, Dr. Magennis, Sir John Moore.

The Council then adjourned.

THE Gloucestershire Scheme for the Extension of Medical Services, which was formally approved by the Ministry of Health in April, 1920, has been steadily coming into effective operation during the past month. Out-stations are now, or will shortly be, available in the areas of the Bristol Hospital, the Cheltenham General Hospital, and the Gloucestershire Royal Infirmary, and a circular letter as been issued by Dr. J. Middleton Martin, executive medical officer, to the medical officers in charge of the stations. The scheme deals with school children, tuberculosis, venereal disease, ex-Service men referred by pensions Committees, mothers and infants under the maternity and child welfare scheme, and other groups of patients by agreement.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

THE annual dinner of the Federation of Medical and Allied Societies was held on May 26th at the Café Royal, London, Sir BERKELEY MOYNIHAN, the President of the Federation, being in the chair. The special guests of the evening were Dr. Christopher Addison, the late Minister of Health, and his successor, Sir Alfred Mond.

The loyal toast having been drunk, Sir BERKELEY MOYNIHAN proposed the health of Dr. Christopher Addison, the first Minister of Health. In eloquent terms he commended Dr. Addison's scientific equipment, sympathetic attitude towards medicine, and dignity under ill-informed criticism.

Dr. ADDISON thanked the Federation for the warm reception of the words from the chairman, and said that he especially valued the opinion of a body whose "aim is wide and public spirited, and marks a thoroughly wise departure from the usual purposes of professional associations. It is to promote in the medical profession the means whereby societies and associations of widely different aims from the professional or technical point of view may come together to consider not their own interests only, but in what manner they can work together for the public good, how the work of central or local governmental authorities affects the work of the medical profession and how it may best be guided and helped."

The Community of Medical Interests.

Dr. Addison then pointed out that the medical profession is not simply a body of trained men with work and interests bounded by a professional ring fence. If there was one lesson of the war, he thought, more manifest than another (though there were signs that it is being forgotten) it is that, in the language of the Scriptures, "we are members one of another." The strength or weakness of one class must be the strength or weakness of the rest, to be revealed in the time of stress, and conversely the progress and prosperity of any one class could not be promoted at the expense of the rest of the community, but would be conditioned by their progress and prosperity. He continued:—"The Federation seeks to foster in the profession a lively interest in public questions, and is confronted with peculiar difficulties, for the absorbing nature of medical practice leads to a detachment from public issues, making it difficult for medical men to appreciate the task of those who are associated with the work of government and its many-sided complications. Therefore it is hard for medical men to provide in considered and collective form the assistance which they are fitted to render to public authority. But society will seek more and more to enlist the aid of those who can help it to promote the physical well-being of its citizens—for the strength of the State is measured by the capacity of its individual members—and you all know how great is that mass of avoidable disability. In the early stages of the Ministry of Health its dominant purpose was necessarily the development of preventive agencies, primarily with the authority of the State, though the executive agents must, for the most part, be members of the medical or closely allied professions. We had and we have to take long views and be willing to create agencies and set work going that must take time to develop and to achieve results. Opportunist spectacular performances are not the function of a Ministry of Health. If they were to be, they would destroy any chance of achievement of its great and governing purposes."

Port Sanitary Work during the War.

Dr. Addison illustrated his meaning by pointing out that when the Ministry was established improved organisation of sanitary work at ports with suitable expert aid and laboratory equipment was arranged, so that the country should escape the various pestilences let loose by the war. "For this purpose," he said, "I inaugurated a system of assistance to Port Sanitary Authorities which they both needed and thoroughly deserved, whereby additional assistance of a suitable kind was available where required. So far as cost is concerned, the total of this effort is represented by a sum of £65,000 in this year's Estimates. It is a small figure compared with the millions people talk about when we are coping with a railway strike or coal dispute. Owing to the vigilant efficiency of the Port Sanitary Authorities and their officers, with the assistance given under the scheme devised, we have, as you know, almost completely escaped the risks against which it was designed. I have been surprised that this item has not been picked out as one of those portions of expenditure for which I am styled 'a squander-maniac,' because in the absence of an epidemic the kind of critic who goes in for these terminological fireworks can see nothing of a definite kind on which the money was expended. The fact, of course, that this trifling insurance has enabled us to escape disasters the consequences of which would have been hundreds of times more costly than the insurance itself is not the sort of consideration which appeals to the critic whose pabulum is head-lines."

Maternity and Child Welfare Work.

As another illustration of the reasonable expending of money he brought forward Maternity and Child Welfare work, saying that throughout the country it was costing a good deal of money and that in some cases the country was not getting the return which should have followed on the better training provided. "Therefore," said Dr. Addison, "I arranged for grants at about £20 a head for special training-classes for nurses, health-visitors and others, and added two or three expert medical officers centrally to supervise the work, as it was quite evident that the staff available could not physically compete with the amount required. The expenditure was a few thousand pounds, and, although I do not put it higher than being an important contributory cause to the recent striking improvement in the child-welfare statistics, it is one of the few new facts in the situation the importance of which cannot be ignored. You may be interested to know that the recent vote by Parliament to cover a week's loss owing to a railway strike is seven years the total expenditure in England and Wales out of the Exchequer of the whole of our Maternity and Child Welfare services; that the ten millions proposed to be given in aid of miners' wages will represent about nine years of our total Maternity and Child Welfare Exchequer contributions. . . . If it comes to a contest as to which expenditure is the more important to maintain, I tell you frankly that I shall place the interest of British babies before the building of barracks in Bagdad, and that a thousand maternity beds in decent houses for the use of women, who are now living in wretched slums, are of more value, as they are of less cost, than one giant gas-bag of doubtful utility."

The Vision of Opportunities.

After referring to the necessity for commencing the work in preventive medicine of the Ministry of Health by tackling the housing problem, he said that it would be easy to indicate a number of directions in which developments would be certain to arise in connexion with improved preventive and early remedial health services, such as would provide a substantial contribution towards diminishing the avoidable waste of life and strength to which we were still exposed. These things, he said, need cause no violent dislocation of business or great expenditure. There would be phases of advance and reaction, but the lessons of the War would not be forgotten, and they could only properly be utilised if they were supported by an instructed and considered professional opinion. "It is the purpose of the Federation to aid in furnishing that essential service, and it is evidence of a vigorous spirit to have a vision of the greater

opportunities for public and professional service which the coming years would certainly offer."

Sir MALCOLM MORRIS then proposed the health of Sir Alfred Mond, the Minister of Health, in a speech in the course of which he described the origin of the Federation and its constructive policy.

Sir ALFRED MOND, in reply, said that his friend and predecessor in office, Dr. Addison, had two advantages over him:—First, as a medical man himself, he could command and obtain medical assistance from personal friends; secondly, he started the work of the Department at a time when the national purse was popularly supposed to be bottomless, whereas at the present moment rigorous economy was necessary. Sir Alfred Mond pointed out, however, that small economies which resulted in large expenses were not businesslike propositions, and that his aim would be to do a few things thoroughly, rather than spread the financial resources of the Ministry over a large number of services. Speaking as a layman, though head of the Ministry of Health, he ventured to point out that doctors' work was so absorbing that they were apt to look at public affairs in the wrong perspective. They could hardly help thinking of the nation in terms of the sick, whereas the majority of the public was perfectly healthy. He humorously commended the habit of doctors to take regular recreation on the golf-course, saying that such a habit was very good for doctors quite apart from any health question, as it compelled them to become acquainted with lay views and helped them to understand how medical affairs were regarded by a deeply interested public. Sir Alfred Mond then pointed out that the medical profession possessed most powerful influence in moulding opinion, but they must develop unanimity and decision. He concluded by saying that he should always welcome from the Federation all the assistance which they could give him in the shape of considered and corporate views on questions affecting the professions of medicine and pharmacy and nursing.

The toast of "Prosperity to the Federation" was proposed by Lieutenant-Colonel F. E. FREMANTLE, M.P., who said that he spoke as, in a sense, the first baby of the Federation, inasmuch as he believed that he was the first Member of Parliament in support of whose candidature the Federation had supplied speakers and assistance. He congratulated the Federation on the work that it had done and the ideals which it had placed before it. Speaking as a loyal member of the British Medical Association, he asserted that the work of the Federation could not be done by the Association.

Dr. ARTHUR LATHAM, replying for the Federation, thanked those present for their sympathy and asked for their support. He said the Federation was a federating force for the purpose of focusing the knowledge possessed by all grades of health workers to the advantage of the community. They regarded the manufacture of health as the key industry of the country, and they differed from all other societies in that the patient was their prime consideration—the potential patient, who represented the preventive side of their work, and the actual patient, who would benefit by their efforts in remedial or happily curative measures against disease. They wished to enlighten public opinion in health matters, and he called attention to the fact that the public conscience was awakening to the value of the health worker, as was shown by the number of medical men in the House of Commons, the peerage conferred on Lord Dawson of Penn, and the appointment of Sir Clifford Allbutt to the Privy Council. They were jealous of the interests of their members, but they hoped by suasion rather than dictation to show the public and the leaders of the public that if they were to have an efficient band of health workers they must make such a career an attractive one. Behind their work was a good idea. Individuals might delay the fructification of a good idea, but they could not kill it. Already they represented 18,000 doctors and 90,000 health workers, and he was confident that their sphere of influence would rapidly increase.

Among those present at the dinner were Lord Dawson of Penn; Sir Arthur Stanley (President, British Hospitals Association); Sir George Newman (Chief Medical Officer, Ministry of Health); Sir H. Kingsley Wood, M.P. (Parliamentary Private Secretary, Ministry of Health); Sir Arthur Robinson (Permanent Secretary, Ministry of Health); Sir Thomas Neill (Chairman of Council for National Health Insurance, Ministry of Health); Mr. A. C. Thompson (Chairman of National Conference of Industrial Approved Societies); Viscount Knutsford (British Hospitals Association); Lord Queenborough; Dr. Nathan Raw, M.P.; Dr. Donald Murray, M.P.; Sir Philip Magnus, M.P.; Dr. G. de Bec Turtle (President, Harveian Society of London); Dr. A. G. Buchanan, (President, Chelsea Clinical Society); Dr. F. J. McCann (President, West London Medico-Chirurgical Society); Dr. T. A. Goodfellow (President, Manchester Medical Society); Dr. J. Forsyth Craig (President, Birmingham and District Medical Practitioners Union); Dr. Godfrey Carter (President, Sheffield Medico-Chirurgical Society); Lieutenant-Colonel Hugh Stott (President, Brighton and Sussex Medico-Chirurgical Society); Dr. J. E. Gemmell (President, Liverpool Medical Institution); Dr. J. F. Murton (President, Nottingham Medico-Chirurgical Society); Miss Olga Nethersole (Hon. Secretary, The People's League of Health); Mr. E. T. Neathercoat (President, Pharmaceutical Society of Great Britain); Sir William Glyn-Jones (Secretary, Pharmaceutical Society of Great Britain); Mr. Philip Rowsell, J.P. (Pharmaceutical Society of Great Britain); Dr. Farquhar Buzzard (Royal Society of Medicine); Dr. J. F. Gordon Dill (Royal Society of Medicine); Sir John MacAlister (Secretary, Royal Society of Medicine); Dr. Jane Walker and Lady Barrett, M.D. (Medical Women's Federation); Sir StClair Thomson; Mr. Ernest Clarke; Dr. Charles Buttar (Harveian Society); Sir Bruce Bruce-Porter; Mr. E. B. Turner (National Council for Combating Venereal Diseases); Major R. Worth, Sir Maurice Craig, and Dr. E. S. Pasmore (Medico-Psychological Association of Great Britain and Ireland); Miss E. C. Barton (Poor-law Infirmary Matrons Association); Dr. and Mrs. Remington Hobbs (Infirmary Medical Superintendents Society); Sir Sydney Beauchamp; Sir Squire Sprigge; Sir Crisp English; Colonel A. S. Woodwark; Mr. P. L. Lockhart-Mummery; Dr. H. J. Cardale and Dr. R. J. Farman (Association of Panel Committees); Dr. F. Hernaman-Johnson (British Association of Radiology and Physiotherapy); Mr. C. F. Rilot (British Dental Association); Mr. Montagu Hopson (President, British Dental Association); Mr. Robert Lindsay (Dental Secretary, British Dental Association); Major C. Thomson, M.D. (West Kent Medico-Chirurgical Society); Sir Ronald Ross (British Science Guild); Dr. E. H. M. Stancomb (Southampton Medical Parliamentary Committee); Miss H. L. Pearse and Miss Lord (National Union of Trained Nurses); Miss Sheriff-MacGregor (College of Nursing); Dr. H. Wansey Bayly (Society for the Prevention of Venereal Disease); Mrs. Greenwood, Miss Armitage, Miss de Chaumont, Miss Hoskins, Miss Jarvis, and Miss Whitbread (Women Health Visitors Association); Sir Ernest Hodder-Williams; Dr. David Lawson; Dr. G. E. Haslip; and Dr. Howard Mummery (General Secretary, 5, Vere-street, W. 1.)

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Public Health Association.

THE Brisbane Medical Congress last year decided, through some members interested in public health, to form a Public Health Association of Australia. The underlying idea is that the laity should be encouraged and educated to take an interest in matters of public health apart from politics. A provisional committee was appointed to complete preliminaries. A meeting was held in Melbourne Town Hall on April 11th to inaugurate the movement. Office-bearers are already appointed, and although the aim of the Association is stated to be "free from departmental connexions," almost all the office-bearers are departmental medical officers. The President is Dr. J. H. L. Cumpston, Director of the Federal Health Department. Provision is made for all classes of members, but the lowest subscription is to be £1 per annum. It is proposed, if funds permit, to publish a periodical devoted to questions of public health. His Excellency the Governor of

Victoria and the Countess of Stradbroke attended the meeting.

Death of Dr. C. J. Tozer.

The trial of Mrs. Mort, charged with the murder of Dr. C. J. Tozer, under circumstances already described, came before the Chief Justice and a jury in Sydney on April 6th. The accused was still in a weak state, and required special attention throughout the proceedings. Medical evidence was given that Mrs. Mort had always been of neurotic temperament, and evidence was also brought that she had applied for employment as a film artist, and had been sent home by the manager suffering from delusions that men were following her. Dr. R. Lee Brown, Government medical officer at Long Bay Penitentiary, where Mrs. Mort was detained, gave evidence that he had seen her daily during her detention and observed no signs of insanity. The jury decided that the accused was insane when she committed the act, and she was ordered to be detained during the Governor's pleasure.

Small-pox.

A suspicious case of illness in the Melbourne Hospital was reported to the health authorities as probably small-pox. The patient was a coloured fireman from the s.s. *Gracchus*. The Health Department at first pronounced the disease to be chicken-pox, but subsequently regarded it as small-pox. Six cases from the same steamer have since been reported from Sydney, whither the *Gracchus* had proceeded. She called at Fremantle and Adelaide, but no shore cases have yet been registered.
May 4th.

DANGEROUS DRUGS ACT: REVISED REGULATIONS.

THE Committee appointed last March by the Home Secretary to consider the objections raised to the draft regulations issued under the Dangerous Drugs Act, 1920, has issued a report, dated May 12th, as a Parliamentary White Paper [Cmd. 1307. Price 3*d.*], which may be obtained from H.M. Stationery Office. The personnel of this Committee was as follows: Mr. Chester Jones (chairman), Sir Malcolm Delevingne, K.C.B., Captain W. E. Elliot, *M.C.*, M.P., Major A. C. Farquharson, M.D., M.P., Mr. Gerald A. France, M.P., Sir Beville Stanier, Bart., M.P., and Mr. W. J. U. Woolcock, *C.B.E.*, M.P., with Mr. A. H. Anderson of the Home Office as Secretary.

After a closely reasoned argument, which we summarise elsewhere, the Committee presents the regulations in an amended form, which will, it trusts, go a long way to prevent the increase of the drug habit without avoidable inconvenience to the medical or pharmaceutical profession or to the public.

TEXT OF THE REGULATIONS.

1. *Application.*—The drugs to which these Regulations apply are morphine, cocaine, ecgonine, and diamorphine (commonly known as heroin), and their respective salts, and medicinal opium, and any preparation, admixture, extract or other substance containing not less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine or diamorphine.

For the purpose of the foregoing provision, the percentage in the case of morphine shall be calculated as in respect of anhydrous morphine.

2. *Manufacture.*—No person shall manufacture or carry on any process in the manufacture of morphine, cocaine, ecgonine or diamorphine, or their respective salts or medicinal opium—

(*a*) unless he is licensed by the Secretary of State or is authorised by these Regulations or by any authority granted by the Secretary of State to do so,

(*b*) except on premises licensed for the purpose by the Secretary of State,

(*c*) otherwise than in accordance with the terms and conditions of such licence or authority.

3. *Sale, Distribution and Possession.*—No person shall supply or procure or offer to supply or procure any of the drugs to or for any person whether in the United Kingdom or elsewhere or shall advertise any of the drugs for sale—

(*a*) unless he is licensed by the Secretary of State or is authorised by these Regulations or by any authority granted by the Secretary of State to supply the drug or unless he is licensed by the Secretary of State to import or export the drug or unless he is licensed or otherwise authorised to manufacture the drug or

(*b*) otherwise than in accordance with the terms and conditions of such licence or authority.

4. Except when the drugs are lawfully dispensed in pursuance of a prescription given by a duly qualified medical practitioner, registered dentist or registered veterinary surgeon, or are supplied by a duly qualified medical practitioner or registered veterinary surgeon who dispenses his own medicines, in accordance with the conditions hereinafter specified, no person shall supply or procure or offer to supply or procure any of the drugs to or for any person in the United Kingdom who is not licensed or otherwise authorised to be in possession of the drug nor to any person so licensed or authorised except in accordance with the terms and conditions of such licence or authority.

Provided that administration of the drugs by or under the direct personal supervision of a duly qualified medical practitioner, or by or under the direct personal supervision of a registered dentist in dental treatment, or by or under the direct personal supervision of a registered veterinary surgeon in the treatment of any animal, shall not be deemed to be supplying the drug within the meaning of this and the following Regulations.

5. A prescription for the supply of the drugs must comply with the following conditions:—

The prescription must be in writing, must be dated and signed by the medical practitioner, registered dentist or registered veterinary surgeon as the case may be, with his full name and address, and must specify the name and address of the person for whose use the prescription is given, and the total amount of the drug to be supplied on the prescription, except that in the case of prescriptions issued for national health insurance purposes on the form provided by the Insurance Committee the medical practitioner's address need not be marked on the prescription.

A prescription shall only be given by a registered dentist for the purposes of dental treatment and shall be marked "For local dental treatment only."

A prescription shall only be given by a registered veterinary surgeon for the purposes of treatment of animals and shall be marked "For animal treatment only."

The Secretary of State may prescribe and issue a form hereinafter referred to as the "official form" for use in giving prescriptions for the drugs, and in that case a prescription for any of the drugs shall only be given on an official form or in the case of prescriptions issued for national health insurance purposes on the form provided by the Insurance Committee, provided that in a case of emergency when the person giving the prescription has not the official form available, the prescription may be given without using the official form, but in that case shall be marked with the words "Official Form not available" or similar words.

A medical practitioner, registered dentist or registered veterinary surgeon shall not give any prescription for the supply of any of the drugs otherwise than in accordance with the foregoing conditions.

A medical practitioner who dispenses any medicines to which these Regulations apply shall enter particulars thereof in his day book or in the register hereinafter specified.

6. The following conditions shall be observed by persons dispensing prescriptions for the drugs:—

(*a*) If an official form is prescribed and issued by the Secretary of State in pursuance of the foregoing Regulation, a prescription for any of the drugs shall only be dispensed if the prescription is on one of those forms or on the form provided for national health insurance purposes by the Insurance Committee, or in the case of an emergency prescription given under the conditions specified in the foregoing Regulation, if the person dispensing the prescription is acquainted with the signature of the medical practitioner, registered dentist, or registered veterinary surgeon by whom the prescription purports to be given, or is acquainted with the person for whose use the prescription is given and has no reason to suppose that the prescription is not genuine;

(*b*) the drugs shall not be supplied more than once on the same prescription: Provided that, if the prescription so directs, the drugs may be supplied on more than one

but not exceeding three occasions, as directed in the prescription, at intervals to be specified in the prescription;

(*c*) the prescription shall be marked with the date on which it is dispensed, and shall be retained by the person, firm, or body corporate by whom the prescription is dispensed, and (unless issued for national health insurance purposes on the form provided by the Insurance Committee) shall be kept on the premises where it is dispensed and shall be available for inspection.

7. No person shall be in possession of any of the drugs unless—

(*a*) he is licensed to import or export the drug, or

(*b*) he is licensed or otherwise authorised to manufacture or supply the drug, or

(*c*) he is otherwise licensed by the Secretary of State or authorised by these Regulations or by any authority granted by the Secretary of State to be in possession of the drug, or,

(*d*) he proves that the drug was supplied for his use by a duly qualified medical practitioner or registered veterinary surgeon or on and in accordance with such a prescription as aforesaid.

8. (i) No person shall supply any morphine, cocaine, ecgonine, diamorphine or their respective salts or any medicinal opium unless the package or bottle containing it is plainly marked with the amount of the drug in the package or bottle.

(ii) No person shall supply any preparation, admixture, extract, or other substance containing any of these last, mentioned drugs and coming within these Regulations unless the package or bottle is plainly marked

(*a*) in the case of a powder, solution, or ointment, with the total amount thereof in the package or bottle and the percentage of the drug in the powder, solution, or ointment;

(*b*) in the case of tablets or other articles with the amount of the drug in each article and the number of articles in the package or bottle.

This Regulation shall not apply to any preparation dispensed by a duly qualified medical practitioner or on the prescription of a duly qualified medical practitioner.

9. Every person who supplies any of the drugs shall comply with the following provisions:—

(*a*) he shall enter or cause to be entered in a register kept for the sole purpose all supplies of the drug purchased or otherwise obtained by him and all dealings in the drug effected by him (including sales or supplies to persons outside the United Kingdom) in the form and containing the particulars shown in Schedule I. to these Regulations;

(*b*) separate registers or separate parts of the register shall be used for (*a*) cocaine and ecgonine and substances containing them, (*b*) morphine and substances containing it, (*c*) diamorphine and substances containing it, (*d*) medicinal opium; provided that with the approval of the Secretary of State separate registers may be kept for separate departments of a business;

(*c*) he shall make the entry with respect to any of the drugs purchased or otherwise obtained by him on the day on which the drug is received and with respect to any sale or supply by him of the drug on the day on which the transaction is effected; or where that is not reasonably convenient on the day following the day on which the drug is received or the transaction is effected;

(*d*) where he carries on business at more than one set of premises he shall keep a separate register or registers in respect of each set of premises;

(*e*) he shall keep the register or registers in some part of the premises to which it relates so that it shall at all times be available for inspection in accordance with the provisions of the Act;

(*f*) he shall not cancel, obliterate, or alter any entry in the register or make therein any entry which is untrue in any particular. Any mistake in an entry may be corrected by a marginal note or footnote giving the correct particulars and dated;

(*g*) he shall furnish to the Secretary of State or to any person authorised by any order of the Secretary of State for the purpose all information in regard to any purchases by him of the drugs, all stocks held by him of the drugs, and all transactions effected by him in the drugs as may be required by the Secretary of State for the purpose of seeing that the provisions of the Act are observed.

A duly qualified medical practitioner who records in a day book particulars of any of the drugs supplied by him to any patient, together with the name and address of the patient and date of the supply, may, in lieu of keeping the register required by this Regulation of drugs sold or supplied by him, enter separately for each of the drugs in a book to be kept for the purpose references under the appropriate dates to the records in the day book of any supply of the drug. A person lawfully keeping open shop for the retailing of poisons in accordance with the provisions of the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, may in lieu of keeping the register required by this Regulation of drugs sold or supplied by him enter separately for each of the drugs in a book to be kept for the purpose references under the appropriate dates to the entries in the "Poisons Book" or "Prescription Book" kept by him in pursuance of Section 17 of the Pharmacy Act, 1868, relating to any supply of the drugs. Provided that all such books shall at all times be available for inspection in accordance with the provisions of the Act.

10. Any person lawfully keeping open shop for the retailing of poisons in accordance with the provisions of the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, is hereby authorised—

(*a*) to manufacture at the shop in the ordinary course of his retail business any preparation, admixture, or extract of any of the drugs;

(*b*) to carry on at the shop the business of retailing, dispensing, or compounding the drugs, but subject always to the provisions of these Regulations.

In the event of any such person being convicted of an offence against the Act or of an offence under the enactments relating to the Customs as applied by the Act, the Secretary of State may by notice in the London, Edinburgh or Dublin Gazette withdraw the authorisation aforesaid, if, in the opinion of the Secretary of State, such person cannot properly be allowed to carry on the business of manufacturing or selling or distributing as the case may be, any such drug; provided that the Secretary of State shall, before withdrawing the authorisation in the case of any such person, consult the Council of the Pharmaceutical Society of Great Britain.

11. Any duly qualified medical practitioner, or any registered dentist, or any registered veterinary surgeon or any person employed or engaged in dispensing medicines at any public hospital or other public institution being a person duly registered under the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, or any person in charge of a laboratory for purposes of research or instruction attached to any University, University College, public hospital or other institution approved by the Secretary of State for the purpose, or any person appointed by a local authority with the approval of the Minister of Health as an analyst for the purposes of the Sale of Food and Drugs Acts, 1875 to 1907, is hereby authorised so far as is necessary for the practice of his profession or employment in such capacity to be in possession of and supply the drugs.

12. In the event of any person authorised by these Regulations or by any authority granted by the Secretary of State to manufacture, supply or be in possession of the drugs, or any of them, being convicted of any offence against the Act or of an offence under the enactments relating to the Customs as applied by the Act, the Secretary of State may by notice in the London, Edinburgh or Dublin Gazette withdraw the authorisation in respect of such person, if, in the opinion of the Secretary of State such person cannot properly be allowed to manufacture, supply or be in possession of any such drug.

13. No person shall deliver any of the drugs to any person not licensed or otherwise authorised to be in possession of the drugs who purports to be sent by or on behalf of a person so licensed or authorised unless such person produces an authority in writing, signed by the person so licensed or authorised, to receive the drug on his behalf and unless the person supplying the drug is satisfied that the authority is genuine. This Regulation shall not be deemed to apply to medicines dispensed in pursuance of the foregoing Regulations.

14. Any of the drugs in the order or disposition of any person shall be deemed to be in his possession.

15. In the case of a ship not carrying as part of her complement a duly qualified medical practitioner, the master of the ship shall be deemed to be a person authorised to be in possession of the drugs so far as is necessary to comply with the requirements of the Merchant Shipping Acts, and it shall also be lawful for him, subject to any conditions prescribed by the Secretary of State, to administer and supply the drugs to any member of the crew in accordance with instructions prepared or sanctioned by the Board of Trade. The keeping of a record of the use of the drugs in the official log in accordance with the provisions of the Merchant Shipping Acts shall be deemed to be compliance with the requirements of these Regulations as to the keeping of records.

16. The Secretary of State may exempt from the operation of these Regulations any hospital or other public institution subject to the observance of such conditions as he may by order prescribe.

17. These Regulations shall not apply in respect of the preparations named in Schedule II. to these Regulations, nor to any of the drugs when denatured in a manner approved by the Secretary of State. The Secretary of State may from time to time by order add any other preparation to the Schedule or remove any preparation from the Schedule.

18. In the application of these Regulations to Ireland:—

(*a*) A reference to the Poisons (Ireland) Act, 1870, the Pharmacy (Ireland) Act, 1875, and the Pharmacy (Ireland) Act, 1875, (Amendment) Act, 1890, shall be substituted for any reference to the Pharmacy Act, 1868, and

(*b*) A reference to the Pharmaceutical Society of Ireland shall be substituted for the reference to the Pharmaceutical Society of Great Britain.

Forms to be used by those Supplying Drugs.

Schedule I. gives the approved form of records as follows:—

(*a*) Record of { Morphine, &c. / Diamorphine (Heroin), &c. / Cocaine, &c. / Medicinal Opium. } Purchased or otherwise obtained.

Date on which supply received.	Name of person, body or firm from whom obtained.	Address of person, body or firm from whom obtained.	Amount obtained.	Form in which obtained.

(*b*) Record of { Morphine, &c. / Diamorphine (Heroin), &c. / Cocaine, &c. / Medicinal Opium. } Sold or supplied.

Date on which the transaction was effected.	Name of person, body or firm to whom sold or supplied.	Address of person, body or firm to whom sold or supplied.	Authority of person, body or firm to be in possession of the drug.	Amount sold or supplied.	Form in which sold or supplied.	When sale is on a prescription specify the ingredients of the prescription.

Exemption of Certain Familiar Remedies.

Certain familiar remedies containing narcotic drugs are exempt from the regulations under §17. These are given in a schedule as follows:—

Schedule II.—Cereoli Iodoformi et Morphinæ, B.P.C., Emp. Opii, B.P., 1898, Lin. Opii, B.P., Lin. Opii Ammon., B.P.C., Pasta Arsenicalis, B.P.C., Pil. Hydrarg. c. Opio, B.P.C., Pil. Ipecac. c. Scilla, B.P., Pil. Plumbi c. Opio, B.P., Pil. Digitalis et Opii Co., B.P.C., Pil. Hydrarg. c. Cret. et Opii, B.P.C., Pulv. Cretæ Aromat. c. Opio, B.P., Pulv. Ipecac. Co., B.P. (Dover's Powder), Pulv. Kino Co., B.P., Suppos. Plumbi Co., B.P., Tablettæ Plumbi c. Opio, B.P.C., Ung. Gallæ c. Opio, B.P. (Gall and Opium Ointment), Ung. Gallæ Co., B.P.C.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Thursday and Friday, June 9th and 10th, 1921, in the Guildhall, Gloucester, jointly with the West of England branch of the Society of Medical Officers of Health. On June 9th at 10 A.M. a discussion on Public Health Development in Gloucestershire will be opened by Dr. J. Middleton Martin. At 2.30 P.M. a visit will be paid to Cheltenham Corporation Refuse Destructor, Sewage and Water Works. On June 10th at 10 A.M. Major E. W. A. Carter, M.I.M.C.E., will open a discussion on the Collection and Disposal of House Refuse. Professor H. R. Kenwood will preside. Those proposing to attend the meetings should notify the Hon. Local Secretary, Dr. J. R. Bibby, 9, New Inn-lane, Gloucester, so that the necessary arrangements may be made.

Public Health Services.

The Allocation of Sanatorium Benefit Surplus.

THE Lancashire Insurance Committee has approved a recommendation by its finance committee as to the allocation of a sum of about £18,000 standing to its credit at the end of March. The finance committee recommended that £10,000 should at once be handed over to the county council for its tuberculosis scheme, and that the whole of the surplus should be applied in the same way as soon as its total can be ascertained. The Ministry of Health and the local committee do not see eye to eye as to the disposal of this surplus credited to the committee's sanatorium benefit fund. When the National Insurance Act was amended last year sanatorium benefit was abolished, and the Health Ministry was empowered to provide by regulation for the disposal of any such surpluses, provided that they were paid over to the Ministry itself, except when the Ministry might decide that part should go to the local county council. The local committee has taken its own course without waiting for the approval of the Ministry of Health. The local committee states its reasons in favour of the course it has adopted, and correspondence with the Ministry has taken place. So far the Ministry has not declared its intention to take the Lancashire surplus to its own uses, nor has it stated what part of the total surplus would remain for use in the county area. A conflict has thus arisen as to the disposal of the surplus funds.

Paying Patients at Poor-law Hospitals.

Mr. R. A. Leach, clerk to the Rochdale Board of Guardians, read a paper at the Northern Poor-law Conference, recently held at Keswick, on the admission to Poor-law hospitals of private patients. He stated that had the suggestion been made before the war the reply would have been "No." Having regard to the fact that during the war hundreds of thousands of British sick and wounded were maintained, treated, cared for, and healed in the Poor-law hospitals, why should not these hospitals, if empty beds are available, be used for civilians other than of the Poor-law class? Several boards of guardians, especially in Lancashire, opened their hospitals to such patients. If the hospitals are so opened it was imperative that the guardians should safeguard the rights of the poor, and above all, it behoved the guardians not to allow themselves to be fettered with rules and regulations that might impair the guidance, government, and control of their hospitals; that is, they should not do anything or consent to anything which was calculated to injure them as the statutory authority for the relief of destitution. The sick poor should never come under any risk of hustle with the better-off classes to obtain admission to the hospitals. After discussion the Conference passed a resolution that when there were surplus beds immediate measures should be adopted to take advantage of the changed attitude of the Ministry of Health to throw open this vacant accommodation to non-Poor-law cases, having due regard to the position of local voluntary hospitals.

SCHOOL MEDICAL INSPECTION.

Shrewsbury.

In his report[1] on school medical inspection for 1919 at Shrewsbury Dr. James Fenton, medical officer of health and school medical officer, states that very little had been done during 1916, 1917, and 1918, but that the work returned to normal from the beginning of 1919. The number of children on the registers was 4494, and the number examined in the code groups was 1172, time not allowing of a complete examination in the

[1] Annual Report of School Medical Officer for 1919.

case of the elder children. The most common defect requiring treatment was uncleanliness of the head (22·9 per cent.), and next to this dental disease (9·9 per cent.). Nutrition was satisfactory, only 11 children among those in the code groups (0·94 per cent.) needing attention. There were seven cases of organic heart disease, but only one of definite pulmonary tuberculosis. Dr. Fenton considers that, on the whole, children appear to be better nourished than they were before the war, and has "come to the definite conclusion that there is less evidence of thriftlessness and drunkenness amongst parents." On the other hand, the important but disquieting statement is made that "the inspections show that each year there is a marked falling off in vaccination compared with the previous one, and the time appears to be rapidly approaching when there will be very few children in the town protected against small-pox." Among the 12-year old children, 6·1 per cent.; among those of 8 years, 31·0 per cent.; and of the 5-year old children, 148, or 41·2 per cent., were found to be unvaccinated. It must be acknowledged that the responsibility for this condition cannot be attributed only to the ignorance of the parents. An important advance has been made in the treatment of ringworm of the scalp. During 1915, 77 children lost 11,125 attendances from this cause, causing a total loss of grant amounting to £48 12*s*. At the beginning of 1916 the Education Committee adopted the X ray treatment, and decided to pay the whole of the expense, the children having to be conveyed to Birmingham for the purpose; 136 cases have been treated with entire success during these four years. There has been a saving of over 10,000 school attendances per annum, and a gain of something like £45 per annum in the Government grant. There are now only two children in the whole town absent from school on this account. There has also been an improvement in the cleanliness of the children, owing to the support given by the magistrates and the press, though 22·86 per cent. of those examined in the code groups were found to need treatment.

Cardiff.

Until November, 1919, the work of school medical inspection[2] at Cardiff was carried on under considerable difficulties on account of disorganisation of staff and arrangements due to war conditions. The intermediate group of children (8 years of age) could not be examined, but all arrears were overtaken and the entrants and leavers completed—these numbered 8077; and in addition 1248 children were brought forward as special cases. In the code groups systematically inspected, defective vision (462) and squint (68) combined to form the most numerous group requiring treatment; and after them enlarged tonsils (314), or adenoids (104), or both of these conditions together (89). Organic heart disease was diagnosed in 18 children, of whom 9 were recommended for treatment, and 9 to be kept under observation. Not a single case of definite pulmonary tuberculosis was found during the routine examinations; 6 cases were "suspected," of which 3 were referred for treatment. It is stated that "cases of nose, throat, and ear defects, defective vision, and minor ailments, if treatment is not otherwise procurable, are referred for treatment at the school clinic," where, however, the facilities provided are at present inadequate, and "it is feared that in consequence many have to go without treatment." It is also observed that "there are many cases for the treatment of which no special provision is made, and parents are in such cases recommended to seek the advice of their own doctor." No mention is made of any available hospital or dispensary treatment. As regards care of the teeth, Dr. Edward Walford, medical officer of health for the city and school medical officer, who presents this report, states that "at present the dental arrangements provide only for the inspection of children between the ages of 6 and 8 years, and for the treatment of the children in that group requiring it, and belonging to families whose weekly income does not exceed £4." Everyone will agree with his remarks that "these arrangements are extremely inadequate," and that "the school dental service urgently requires development and expansion, and an additional dentist (whole time) should be appointed." About 5 per cent. of the children inspected suffer from enlarged tonsils or adenoids, and require treatment by an aural surgeon. At present operative treatment is carried out on one half-day a week. This is not enough, and a large number of cases are awaiting treatment. An aural surgeon should attend on two half-days a week, and operations should be performed in the afternoon, the patients being detained overnight in a recovery room, of course under care of a nurse, and handed over to their parents next day. With regard to "minor ailments"—ringworm, scabies, skin diseases, otorrhœa, &c., which are a cause of considerable non-attendance at school, with consequent loss of grant, the arrangements appear to be very unsatisfactory. "No child attends at the clinic for treatment more often than once a week, consequently the treatment devolves to a great extent upon parents, and has to be continued in many instances over a long period, instead of being regularly and carefully carried out by school nurses under the supervision of medical officers." There can be no question that there is urgent necessity, as Dr. Walford points out, for a school clinic to be open daily for, say, two hours, with school nurses in attendance, in order that minor ailments may be treated regularly and thoroughly. The X ray treatment should also be provided for ringworm. There were 92 cases of ringworm of the head during the year under report, 83 of which were "specials," but it is not stated how long these children were absent from school on this account—i.e., how long they were deprived of education through want of effective treatment. The provision of a suitably constructed and equipped building as a school clinic appears to be a pressing need at Cardiff, the facilities for treatment at present being "inadequate and altogether unsuitable." It appears that one room only is available for operations—eye treatment, dental treatment, and for minor ailments. The five rooms at the City Hall at present available are obviously not nearly sufficient. As the city of Cardiff ranks first in the Principality in regard to population and prosperity, it may be confidently anticipated that adequate arrangements will be made by the civic authorities to enable this necessary work to be satisfactorily dealt with.

[2] Annual Report of School Medical Officer for 1919, Cardiff, April, 1920.

VITAL STATISTICS OF LONDON DURING APRIL, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 8·7 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·6, 10·2, and 9·7 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Paddington, Chelsea, the City of Westminster, St. Marylebone, Hampstead, and the City of London; and the highest in Hackney, Finsbury, Bethnal Green, Stepney, and Woolwich. The prevalence of enteric fever was about equal to that in the preceding month; of the 14 cases notified during the four weeks ended April 30th, 2 cases belonged to each of the boroughs of Paddington, Hampstead, Greenwich, and Lewisham. There were 10 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 11·9 and 10 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 2, and 3 in the three preceding months. The case of small-pox occurring during the month was notified from the borough of Holborn. The prevalence of scarlet fever was 10 per cent. less than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Hackney, Bethnal Green, Stepney, Bermondsey, and Woolwich. The Metropolitan Asylums Hospitals contained 3217 scarlet fever patients at the end of the month, against 2648, 2766, and 2652 at the end of the three preceding months; the weekly admissions averaged 411, against 489, 464, and 469 in the three preceding

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1921.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,531,971**	**14**	—	**1**	**1737**	**1077**	**141**	**2**	**14**	**12**	**30**	**3028**	**8·7**	**2**	—	**34**	**20**	**41**	**93**	**52**	**242**	**0·7**	**4387**	**12·6**
West:																								
Paddington ...	149,673	2	—	—	29	22	3	—	—	—	—	56	4·9	—	—	—	—	—	1	4	5	0·4	131	11·4
Kensington... ...	164,177	—	—	—	65	15	7	—	—	—	1	88	7·0	—	—	—	2	2	—	3	7	0·6	146	11·6
Hammersmith...	136,200	—	—	—	76	28	3	—	—	2	1	110	10·5	—	—	—	—	—	2	1	3	0·3	115	11·0
Fulham	158,621	1	—	—	55	33	10	—	1	—	3	103	8·5	—	—	—	—	1	3	1	5	0·4	145	11·9
Chelsea	62,987	1	—	—	15	6	4	—	1	—	1	28	5·8	—	—	—	—	—	1	—	1	0·2	79	16·4
CityofWestmin'r	132,615	—	—	—	25	20	1	—	—	1	1	48	4·7	—	—	—	1	—	3	1	5	0·5	134	13·2
North:																								
St. Marylebone...	101,856	—	—	—	13	14	4	—	1	—	—	32	4·1	—	—	—	—	1	5	—	6	0·8	134	17·1
Hampstead ...	91,519	2	—	—	20	9	2	—	2	—	1	36	5·1	1	—	1	1	1	1	2	7	1·0	77	11·0
St. Pancras... ...	228,178	—	—	—	74	62	6	—	—	—	—	142	8·1	—	—	—	1	3	5	—	9	0·5	225	12·9
Islington	335,907	—	—	—	84	106	9	—	1	2	—	202	7·8	—	—	8	—	6	11	3	28	1·1	349	13·5
Stoke Newington	52,984	—	—	—	25	14	4	—	—	—	—	43	10·6	—	—	—	—	—	2	2	4	1·0	52	12·8
Hackney	225,372	—	—	—	120	75	5	—	1	—	2	203	11·7	—	—	—	—	2	8	2	12	0·7	202	11·7
Central:																								
Holborn	39,676	—	—	1	11	8	4	—	—	—	—	24	7·9	—	—	—	—	—	—	2	2	0·7	52	17·1
Finsbury	78,291	—	—	—	30	34	1	—	—	3	1	69	11·5	—	—	3	—	1	3	—	7	1·2	93	15·5
City of London...	14,447	—	—	—	3	2	1	—	—	—	—	6	5·4	—	—	—	—	—	—	—	—	—	12	10·8
East:																								
Shoreditch... ...	102,044	—	—	—	34	42	6	—	—	—	1	83	10·6	—	—	10	—	4	4	2	20	2·6	140	17·9
Bethnal Green...	114,471	—	—	—	60	53	8	—	1	—	2	124	14·1	—	—	2	2	—	7	3	14	1·6	120	13·7
Stepney	241,770	1	—	—	152	67	5	—	1	—	5	231	12·5	—	—	3	2	1	2	4	12	0·6	237	12·8
Poplar	159,766	—	—	—	53	39	4	—	—	1	1	98	8·0	—	—	1	—	1	5	1	8	0·7	146	11·9
South:																								
Southwark... ...	187,142	—	—	—	73	27	8	—	3	—	—	111	7·7	—	—	—	1	—	2	1	4	0·3	226	15·7
Bermondsey ...	129,189	—	—	—	69	30	3	—	—	—	—	102	10·3	—	—	—	1	2	5	3	11	1·1	136	13·7
Lambeth	293,572	1	—	—	78	50	10	—	—	2	2	143	6·3	—	—	—	3	2	5	5	15	0·7	264	11·7
Battersea	165,664	1	—	—	78	50	4	—	—	1	1	135	10·6	—	—	—	1	3	3	2	9	0·7	195	15·3
Wandsworth ...	346,990	—	—	—	142	78	10	2	—	—	2	234	8·8	—	—	—	1	2	5	3	11	0·4	255	9·6
Camberwell ...	284,712	—	—	—	97	45	8	—	1	—	—	151	6·9	—	—	—	1	5	4	—	10	0·5	252	11·5
Deptford	115,636	—	—	—	53	38	3	—	—	—	2	96	10·8	—	—	—	1	—	2	4	7	0·8	110	12·4
Greenwich	102,408	2	—	—	47	31	2	—	—	—	2	84	10·7	—	—	1	1	—	1	—	3	0·4	92	11·7
Lewisham	174,438	2	—	—	72	43	3	—	—	—	1	121	9·0	1	—	4	—	3	2	2	12	0·9	140	10·5
Woolwich	141,666	1	—	—	84	36	3	—	1	—	—	125	11·5	—	—	1	1	1	1	1	5	0·5	128	11·8

* Including membranous croup.

months. Diphtheria also was somewhat less prevalent—about 12 per cent.—than in March; the greatest proportional prevalence of this disease was recorded in Islington, Hackney, Finsbury, Shoreditch, Bethnal Green, and Deptford. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2648, 2766, and 2652 at the end of the three preceding months, numbered 2429 at the end of April; the weekly admissions averaged 261, against 319, 333, and 290 in the three preceding months. Erysipelas was proportionally most prevalent in Fulham, Chelsea, Stoke Newington, Holborn, the City of London, and Bethnal Green. The 2 cases of poliomyelitis belonged to Wandsworth. The prevalence of encephalitis lethargica showed a marked decrease since the beginning of the year, 77 cases having been notified in January, 56 in February, 24 in March (five weeks), and 14 in April; of these latter, 3 belonged to Southwark, and 2 to Hampstead. Twelve cases of cerebro-spinal fever were notified during the month, against 11, 17, and 14 in the three preceding months; of these 3 were notified from Finsbury, 2 from Hammersmith, 2 from Islington, and 2 from Lambeth. The 30 cases of puerperal fever included 5 in Stepney and 3 in Fulham.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended April 30th the deaths of 4387 London residents were registered, equal to an annual rate of 12·6 per 1000; in the three preceding months the rates had been 12·5, 14·0, and 13·6 per 1000. The death-rates ranged from 9·6 in Wandsworth, 10·5 in Lewisham, 10·8 in the City of London, 11·0 in Hammersmith and in Hampstead, to 15·5 in Finsbury, 15·7 in Southwark, 16·4 in Chelsea, 17·1 in St. Marylebone and in Holborn, and 17·9 in Shoreditch. The 4387 deaths from all causes included 242 which were referred to the principal infectious diseases; of these 2 resulted from enteric fever, 34 from measles, 20 from scarlet fever, 41 from whooping-cough, 93 from diphtheria, and 52 from diarrhœa and enteritis among children under two years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Paddington, Hammersmith, Fulham, Chelsea, Southwark, Wandsworth, and Greenwich; and the highest in Hampstead, Islington, Stoke Newington, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 2 fatal cases of enteric fever were 4 fewer than the average in the corresponding period of the five preceding years. The 34 deaths from measles were about one-sixth of the average; of these 10 belonged to Shoreditch, 8 to Islington, and 4 to Lewisham. The 20 fatal cases of scarlet fever exceeded the average by 7; of these, 3 belonged to Lambeth, 2 to Kensington, 2 to Bethnal Green, and 2 to Stepney. The 41 deaths from whooping-cough were less than a third of the average number; of these, 6 belonged to Islington, 5 to Camberwell, 4 to Shoreditch, and 3 to each of the boroughs of St. Pancras, Battersea, and Lewisham. The 93 fatal cases of diphtheria were 39 in excess of the average; the greatest proportional mortality from this disease occurred in St. Marylebone, Stoke Newington, Hackney, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 52 deaths from infantile diarrhœa were 4 below the average; the greatest proportional mortality from this disease occurred in Paddington, Stoke Newington, Holborn, Bethnal Green, Bermondsey, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during April from these principal infectious diseases was 47 per cent. below the average in the corresponding period of the five preceding years.

URBAN VITAL STATISTICS.

(Week ended May 21st, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·5, 12·4, and 12·5 in the three preceding weeks, fell to 11·3 per 1000. In London, with a population of 4½ million persons, the annual rate was 10·7, or 0·9 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·9 in Swindon, 6·2 in East Ham, and 6·4 in Hornsey to 18·9 in St. Helens, 20·7 in West Hartlepool, and 21·1 in Oldham. The principal epidemic diseases caused 213

deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 63 from infantile diarrhœa, 48 from whooping cough, 44 from diphtheria, 43 from measles, 11 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1·1 in Portsmouth, 1·8 in South Shields, 2·5 in Exeter, and 2·7 in Barrow-in-Furness, and whooping cough of 1·3 in Warrington and in Preston. There were 3299 cases of scarlet fever and 2215 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3238 and 2281 respectively at the end of the previous week. During the week ended May 14th, 5 cases of encephalitis lethargica were notified in the County of London, of which 2 belonged to Stepney and 1 each to Camberwell, Hammersmith, and Poplar. The causes of 34 of the 4011 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 5 each in Liverpool and West Hartlepool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·0, 14·7, and 14·3 in the three preceding weeks, further declined to 13·3 per 1000. The 286 deaths in Glasgow corresponded to an annual rate of 13·6 per 1000, and included 23 from whooping cough, 3 from infantile diarrhœa, 2 from diphtheria, and 1 each from measles and scarlet fever. The 118 deaths in Edinburgh were equal to a rate of 13·8 per 1000, and included 6 from diphtheria, 2 from scarlet fever, and 1 each from measles, whooping cough, and infantile diarrhœa.

Irish Towns.—The 97 deaths in Dublin corresponded to an annual rate of 12·0, or 4·9 per 1000 below that recorded in the previous week, and included 1 each from whooping cough and diphtheria. The 112 deaths in Belfast were equal to a rate of 13·9 per 1000, and included 3 from whooping cough and 1 each from measles, diphtheria, and infantile diarrhœa.

The Services.

ROYAL ARMY MEDICAL CORPS.

F. E. Feilden, late temp. Maj., to be temp. Maj.

Capt. P. D. Warburton retires, receiving a gratuity.

Temp. Capt. C. C. Chance relinquishes the actg. rank of Maj.

Temp. Capts. relinquishing their commns. on apptt. to the Ind. Med. Serv.: F. M. Kirwan, S. R. Prall, and F. R. Thornton.

Temp. Capt. O. E. Finch, relinquishes his commn. and retains the rank of Capt.

To be temp. Lts.: W. E. Barnes and C. A. Lindup.

ARMY DENTAL CORPS.

Capt. A. R. Inglis, Dental Surg., late Spec. List, to be Capt.

F. D. Neal to be temp. Lt. whilst empld. as a Dental Surg.

DEFENCE FORCE.

To be Asst. Dirs. of Med. Servs.: Temp. Cols. G. H. Edington (D.F.), L. J. Blandford (D.F.), F. G. Prowdfoot (D.F.), D. Rorie (D.F.), H. T. Samuel (D.F.), E. A. Wraith (D.F.)

To be Dep. Asst. Dirs. of Med. Servs.: Temp. Majs. F. W. Squair (D.F.), C. J. Martin (D.F.), H. A. Leebody (D.F.)

To be temp. Maj.: J. B. Batchelor.

To be temp. Capts.: W. J. M. White, D. Craig, S. S. Greaves, D. C. MacLachlan, and W. J. C. Watt.

To be temp. Lt.: G. L. Lyon-Smith.

1st (Highland) Fd. Amb. (D.F.).—To be temp. Lt.: G. M. Gray.

3rd (Northumbrian) Fd. Amb. (D.F.).—To be temp. Capt.: A. C. Barker.

44th (Home Counties) San. Sect. (D.F.).—To be temp. Capt.: S. W. Hoyland.

N. Midland Divl. San. Sect. (D.F.).—To be temp. Lt.: H. J. Morgan.

2nd (S. Midland) Fd. Amb. (D.F.).—Temp. Maj. A. E. P. McConnell to be temp. Lt.-Col.

1st (Welsh) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: T. Donovan.

To be temp. Maj.: E. Bull.

ROYAL AIR FORCE.

Capt. (Bt. Maj.) F. C. Cowtan, R.A.M.C., is granted a permanent commission as Squadron Leader.

The undermentioned Flight Lts. relinquish their temporary commissions on ceasing to be employed, and are permitted to retain the rank of Capt.: S. G. Seymour and K. F. D. Waters.

Correspondence.

"Audi alteram partem."

THE ÆTIOLOGY OF MITRAL STENOSIS.

To the Editor of THE LANCET.

SIR,—In his lecture on Mitral Stenosis, published in THE LANCET of May 28th, Dr. Basil Parsons-Smith states that "measles, scarlet fever, small-pox, erysipelas, pneumonia, septicæmia, &c., account for a considerable number of cases" of this form of valvular disease. Can any evidence be brought forward to support such a contention? Personally I should maintain that, from the standpoint of morbid anatomy, there is no such evidence. Murmurs may appear over the heart during a febrile attack in the young, due to almost any cause, but those murmurs are not evidence of endocarditis, and disappear, leaving the heart quite sound. I cannot but think that the text-book statement regarding the numerous causes of an endocarditis which may result in chronic deformity of the valve must be due to a misinterpretation of the nature of temporary cardiac murmurs. This applies not only to systolic murmurs, but to the dull diastolic sound variously named "mid-diastolic" sound, part of a "reduplicated first" sound, or of a "reduplicated second" sound, audible at the apex. Such a sound may appear during various conditions of ill-health and not uncommonly during normal health, but both in ill-health and normal health I have frequently known it to be considered to indicate the presence of mitral stenosis by medical men. Such a sound heard in a case of measles, or some similar disease, may lead to the belief that measles has caused mitral stenosis. If we take the evidence of the post-mortem room, rheumatism and chorea, I maintain, are the only diseases worthy of consideration in connexion with the ætiology of mitral stenosis. Yet in a sense, the word rheumatic endocarditis used as the precursor of mitral stenosis may be said to be a misnomer. Rheumatism and chorea, to a less extent, affect the whole heart, the muscular and interstitial structures, as well as the lining membranes, being affected. It is not disease of the endocardium which produces mitral stenosis, but inflammation of the fibrous structures of the cusps of the valve from the apices of the columnæ carneæ to basal ring. The presence of a small bead of vegetations along the margin of the cusps of the valve during an attack of acute rheumatism or chorea may be described almost as an accident. The inflammation affects the fibrous structures of the chordæ tendineæ, and at the spot where these fibrous structures are inserted into the valve and interlace there is some thickening. The endocardium covering this inflamed band chafes against the endocardium covering the inflamed band on the opposite side. Some vegetations are the result, but they have no bearing upon the disease. The inflamed fibrous structures gradually contract. They draw the two halves of the valve together and the chordæ tendineæ also. A slowly progressive thickening and fusion of cusps and also of the chordæ tendineæ are the result. In short, it is a disease of fibrous structures, not of the lining endocardium.

The above remarks will suggest that "long-continued strain, gout, syphilis, chronic nephritis, plumbism, arteriosclerosis" are not considered to play an important part in the causation of mitral stenosis. Personally, I hold that they play none. Mitral stenosis commences in childhood or early adult life. It may last many years, and in very exceptional cases until over 50 years of age, but even then it has commenced in early life. In thus sweeping aside all such diseases as gout, syphilis, &c., as causes of mitral stenosis, it should perhaps be remarked that there may be one apparent exception,

that exception occurs in association with calcareous disease of the aortic valve. The nature of the disease is to me obscure. It is, however, locally infective in the sense that it may send calcareous processes into the cardiac muscle or into the large flap of the mitral valve. When it sends a well-marked process into this flap it must interfere with the action of the valve, but it cannot be said to produce a true mitral stenosis. I am, Sir, yours faithfully,

Norwich, May 27th, 1921. THEODORE FISHER.

IRRADIATION AND SAFETY.

To the Editor of THE LANCET.

SIR,—I have read with considerable interest and with no little surprise the leading article upon Irradiation and Safety published in your issue of May 28th.

You state that a committee composed of radiologists, physicists, pathologists, and others has been appointed to consider this important question, and you then mention the names of those selected to serve. I note particularly that there is no extra-metropolitan representative on this committee, no representation from Scotland, and none from Ireland. Perhaps it is not within the knowledge of the existing Committee that any X ray or radium work is done outside London, but for their information and guidance I may state that in Manchester there is at the present time the second largest supply, and in the near future there will be the largest supply of radium in the United Kingdom, and that at the Royal Infirmary there is one of the most efficient and most up-to-date X ray departments in the country. Would it not be policy on the part of this very "parochial" committee to invite a few extra-metropolitan representatives of radium and X ray workers to share their responsibility, the more especially as I feel sure that they will eventually have to apply to them for much of the information they ultimately require in reference to the protection of the worker? In Manchester, such items as the blood count of the workers, the regularisation of work, the holidays of workers are matters of ancient history.

May I suggest that the Committee would be well advised to coöpt a few workers from *outside* London if they wish to present in their report anything approaching an up-to-date epitome of actual and practical experience.—I am, Sir, yours faithfully,

W. MILLIGAN,
Hon. Secretary, Manchester and District Radium Institute.

May 27th, 1921.

THE DIAGNOSIS OF DYSENTERY BY THE SIGMOIDOSCOPE.

To the Editor of THE LANCET.

SIR,—For the last five years I have been greatly interested in the diagnosis of dysentery by the sigmoidoscope, a subject which Dr. P. Manson-Bahr and Dr. A. L. Gregg have so well discussed in their paper in THE LANCET of May 28th. In an article published in the Guy's Hospital Reports for January of this year I referred to the strikingly different appearances seen with the sigmoidoscope in amœbic and bacillary dysentery. I have had the advantage over Dr. Manson-Bahr and Dr. Gregg of being afforded the opportunity of examining cases in which actual ulceration of the bacillary type was present, both in the acute stage in Salonica and in one chronic case in England. The appearance is identical with that observed in the ulcerative colitis, which occurs sporadically in England, and which I believe to be of the same nature as the bacillary dysentery of tropical countries. The ulcers are shallow, irregular in outline, varying much in size, and are separated from each other by swollen, deeply congested and easily bleeding mucous membrane. Amœbic ulcers are generally more regular in shape and deeper, and the intervening mucous membrane is normal in appearance, offering a very striking contrast to that of bacillary dysentery. I have several times also seen a very early stage of amœbic dysentery in which small round projections from the mucous membrane are present, some—but not all—of which show a minute central area of necrosis surrounded by a red areola, corresponding exactly to the condition illustrated in the second plate in Sir Leonard Rogers's book on Dysenteries.

It is extremely interesting to watch with the sigmoidoscope from day to day the rapid healing of amœbic ulcers under treatment with emetine, and that of bacillary ulcers with antidysenteric serum. Quite apart from the question of diagnosis, the instrument is of the greatest value in determining when the condition should be regarded as cured. As I pointed out already in the first edition of my book on Medical Diseases of the War, in 1916, I have several times found that ulcers were still present when all symptoms had disappeared and the stools had become perfectly normal. Treatment should always be continued until the sigmoidoscope shows that all trace of active disease of the mucous membrane has disappeared.

I am, Sir, yours faithfully,

New Lodge Clinic, Windsor Forest, Berks, May 30th, 1921. ARTHUR F. HURST.

ABDUCTION PARALYSIS IN EXOPHTHALMIC GOITRE.

To the Editor of THE LANCET.

SIR,—In the report of the proceedings of the Laryngological Section of the Royal Society of Medicine in your issue for May 21st (p. 1081), I am stated to have suggested in regard to a case of bilateral recurrent laryngeal paralysis and exophthalmos that the "symptoms" might have been due to pressure exerted by the enlarged thyroid gland on the sympathetic nerve. I intended to refer only to the exophthalmos, and to convey that the goitre which could produce paralysis of the recurrent laryngeals was unlikely to be the goitre of Graves's disease. The exophthalmos, therefore, might require a special explanation, such as irritation of the sympathetic produced by the pressure of an enlarged thyroid body.—I am, Sir, yours faithfully,

JAMES DUNDAS-GRANT.

Harley-street, W., May 24th, 1921.

TREATMENT OF ACUTE TOXÆMIA.

To the Editor of THE LANCET.

SIR,—The cells of many types of living beings, unicellular and multicellular, secrete poisons—endotoxins for defensive and exotoxins for offensive purposes. The microbes of disease, insects, snakes, and numerous plants furnish examples. All our vegetable medicines are endotoxins which, by means of poisonous action, often combined with disagreeable taste, protect the producing plants from animal enemies. In chronic diseases (e.g., tuberculosis and leprosy) the poisons are mainly endotoxins; in acute diseases (e.g., measles, pneumonia, diphtheria, septicæmia) they are exotoxins. Fever is a reaction to toxæmia. While experience of some poisons—for example, strychnine, quinine, and tuberculin—confers little or no added power of resistance, it is possible to train the individual to increased tolerance of other poisons—for example, nicotine, opium, snake and insect venom, and the toxins of the acute diseases. It is unnecessary to discuss the vexed question as to how this tolerance arises; bacteriologists have formulated many suppositions; but, presumably it is, in essence, what biologists call "a useful acquirement," a product of functional activity, an habituation. The individual becomes "used" to, accustomed to, educated to toxins, and, in recovery from acute disease, his cells, no longer poisoned to impotence, are able, as a consequence, to attack and destroy the pathogenic organisms. Hence recovery and acquired immunity, temporary or permanent.

This habituation may be achieved in three distinct ways. (1) By beginning with small, and proceeding to larger and larger doses of toxin, as in tobacco and opium smoking, and when diphtheria toxin is administered to a horse during the manufacture of antitoxin. (2) By beginning with and maintaining in action one large dose, as happens in acute disease which is followed by recovery. (3) By antitoxin and vaccine treatment, the rationale of which, as I say, need not be discussed.

The second method is exceedingly dangerous and is the cause of death in disease. The last method has been attempted in many infections, but as yet it has been conspicuously successful in only a few acute diseases—e.g., diphtheria and small-pox. Were it possible in acute illness to combine antitoxic serum with small doses of toxin, we should have an ideal method of cure. But sera for many acute diseases are lacking. Moreover, in illness the patient is already suffering from a large dose of toxin, which the introduction of small doses from outside would only make larger. Consequently, during illness, the only conceivable method of causing a sufferer to experience small doses is to reduce the amount of toxin in him. I do not know that this has ever been consciously attempted. I believe, however, it is not impracticable. In other words, I believe it is possible to abstract toxin from a sufferer.

Consider lobar pneumonia. A portion of the lung is invaded by the pathogenic organisms; blood is extravasated; and that portion of the lung becomes more or less solid. The temperature rises, rigors occur, the patient suffers from headache, sleeplessness, and a general feeling of illness. The severity of the disease is not at all strictly proportionate to the amount of lung involved, but depends rather on a toxæmia which especially affects the heart and breathing centres. In favourable cases a "crisis" occurs about the fifth to tenth day. Commonly the patient sleeps and awakes some time later feeling much improved. His temperature has fallen, his headache, rigors, and sleeplessness have gone, and he is bathed in sweat. Apparently the condition of his lung has not altered; but later gradual resolution occurs, and the extravasated and disintegrated blood is voided as "rusty" sputum.

Sweating is nature's mode of cooling the healthy body by evaporation from the surface. But if, as usually happens in pneumonia, the patient is thickly covered with bedclothes and evaporation prevented, the temperature still falls. Presumably, therefore, something more than mere exudation and evaporation of fluid occurs in the crisis—something which in itself causes the fall of the temperature and the general improvement. I can conceive no reason for such a sudden change except a quick elimination of toxins, and, in view of the lack of evidence of increased activity in other possible channels of elimination, I cannot conceive by what road the toxins can be passed out if not by the sweat. I know of no evidence that toxins have been found in the sweat; but then I do not know that they have been sought there. Since recovery from acute diseases is associated with a falling temperature, moisture of the skin, and sleep, the administration of antipyretics, sudorifics, and soporifics was formerly common. But the medicines and the dosage generally employed depressed the heart and breathing centres, and of late it has been regarded as almost axiomatic that antipyretics and sudorifics are injurious under such conditions.

But if we give a patient, suffering from pneumonia (for example) and not already poisoned past redemption, the following dose, aspyrin 10 gr., phenacetin 5 gr., and pulv. ipecac. co. 5 gr., we get (as far as my experience goes) what has all the appearance of an artificial crisis, without depression of the heart and breathing centres, or any other ill-effects. The patient soon falls asleep, and wakes up some hours later feeling much better, bathed in sweat, his temperature down, his rigors and headache gone, and his pulse and breathing improved. The signs of illness will gradually return, but they can be abolished in the same way once or twice a day till permanent improvement sets in. On such occasions the patient will be relieved and rested, and unless my experience has been unusual, his illness shortened.

Lately I myself fell ill of lobar pneumonia. I began the treatment I describe about the third day, having previously received ordinary treatment; but I know no good reason why I need have waited so long. My most vivid recollection is the immense and blessed sense of relief that followed each dose. I fell asleep within half an hour. After waking, I was able for some hours to read or converse with comfort; indeed, with little feeling of illness. I suppose I took six or seven doses in all. Within a week I was writing at my desk. On the tenth day of illness I was taken for a 30 miles motor drive in the country. On the twelfth day I was walking about visiting friends at their own houses. On the thirteenth day I was back at full medical work feeling none the worse. I am not young. I voided not rusty sputum, but bright blood, showing rapid resolution. As well as I am able to judge, at each artificial crisis toxins were eliminated in large quantities, and the body was thus presented with several small doses, instead of having to make head against one continuously large dose. Certainly, while my temperature was high I felt poisoned; during the intervals I felt, or seemed to feel, relief from poisoning. Apparently my sweat centre was roused to activity, while my heart and breathing centres were relieved by the elimination of the toxin.

I have never known ill-results follow this treatment, though it has been tried lately in a fair number of cases both by myself privately and by friends in hospital practice. The following is a fair sample of cases:—

Lobar pneumonia. Advanced stage. No improvement followed treatment. Death. Apparently the patient was poisoned beyond redemption.

Lobar pneumonia. Early stage. The temperature was taken as a guide and several doses given. This case followed a course very similar to that in my own illness. Patient was up and about on the tenth day.

Broncho-pneumonia following suicidal immersion. Only one dose was given. Sleep. Sweating. Temperature fell, and never rose again. Recovery, but "vast quantities of sputum were voided for four days."

Mild rheumatic fever. Some temporary relief followed each dose, but apparently no permanent improvement, though treatment was long continued. But aspirin has been found very useful in this disease. How does it act? Hardly as an antiseptic.

Diphtheria. Twenty thousand units of antitoxin given about the same time as the dose. Sleep. Sweating. Patient awoke declaring himself recovered. Temperature never rose again. No further treatment necessary. Presumably, in this case the swift reaction to the antitoxin occurred because much of the toxin had been eliminated. That is, serum treatment was combined with a small dose of toxin.

Threatened breast abscess a week after child-birth. Temperature 101·5° F. Sleepless. Acute headache. Bad mental condition. Dose given. Slept. Sweated. Awoke feeling much better in mind and body. Temperature normal. Threat of abscess gone. No further treatment.

Diphtheria. Only one dose given, which apparently had no effect, good or bad.

Enteric fever. Only one dose given, which apparently had no effect.

Septic infection of ureter. Rigors. Temperature 105°. Effect of doses as in my own illness. Quick uncomplicated recovery in a week.

Two cases of pyrexia of uncertain origin. One dose given. Sleep. Sweating. Immediate recovery.

Measles in child of 6. Early eruptive stage. Severe. Cyanosed, so that mother remarked on "white appearance about mouth." Dose (1/6 adult) given at midday. Slept and later passed a good night. Next morning playing happily in bed. Temp., cyanosis, and photophobia gone. Little cough. Rash fading. Immediate recovery.

Measles in child of 7. Dose given, but little apparent next day. Dose repeated twice. Almost well third day.

Measles in child of 5. Much improved next day. Practically recovered third day.

These are sample cases. Up to now the suggested treatment has apparently given such good results in many cases that I have hopes that it will prove generally useful in the treatment of acute toxæmia—for example, in puerperal fever, surgical sepsis, tetanus, small-pox, and the like. But medicine is full of decaying mare's nests. It is never wise to trust to the experience furnished by a few cases to a few men. I venture, therefore, to ask if some of your readers, medical and surgical, will try this treatment, and either publish their results or inform me of them. Obviously, even if the treatment be useful in some acute diseases, it is sure not to be useful in others; the combination of drugs I suggest may be improved on; there may be a right and a wrong stage in each disease for the commencement of treatment; and so on. I suggest that in every instance the trial shall begin by giving a single dose in a single suitable case. If the results are not unfavourable, the treatment may be continued and the experiment extended. My own experience has been such that I feel very confident. But that, I suppose, is the way of all beginners. It should be noted that I suggest an addition, not an alternative, to ordinary treatment. The extreme simplicity of the suggested addition is liable to create scepticism; and though simplicity does not always imply inefficiency, unfortunately it often does. However, the test, and perhaps the improvement of this "reduction" treatment, is easy.

I am, Sir, yours faithfully,

Southsea, May 20th, 1921. G. ARCHDALL REID.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Dr. Frederic Thomson, in your issue of May 21st, brings before our profession a very serious matter in emphasising the importance of early diagnosis in diphtheria, and complains that many of the patients arriving at his hospital had been ill for some time, and consequently the toxins of the disease had had too much time for their deadly work. One common cause for delay in reporting these cases is the fear, on the part of the medical man in attendance, of sending a case into a diphtheria ward without being certain that his diagnosis was correct. To get over this difficulty, some years ago the Public Health Committee of the Wimbledon Corporation provided in their isolation hospital some observation wards, where doubtful cases could be sent at once. These cases were watched for a day or so, bacteriological examinations made, and antitoxin given, &c., and if the case turned out to be follicular tonsillitis no harm was done. The Public Health Committee also provided in a very central place in the town—viz., the fire-station—a supply of antitoxin and syringe available for every medical practitioner by day or night, so that time should not be lost in the administration of antitoxin. A good rule is in doubtful cases to err on the safe side, and give antitoxin at once, without waiting for the results of a bacteriological examination or for the disease to develop.

It seems to be that if the Public Health authorities throughout the country followed the example of the Wimbledon Corporation in the provision of "observation wards," and an available supply of antitoxin with syringe, &c., there might soon be an appreciable decrease in the mortality of diphtheria.

I am, Sir, yours faithfully,

Wimbledon, May 23rd, 1921. S. R. COLLIER.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—I would ask Dr. I. Harris, whose paper appeared in your issue of May 21st, how he thinks it possible to obtain an increased volume of flow per unit of time through the arterial system without either dilatation, at least, of the capillaries or rise of the blood pressure. For purposes of argument let us take Cases 1, 6, and 7 in his Table I., where, after the administration of digitalis, there is recorded an increase of pulse pressure, but no rise in pulse-rate. Let us also presume with Dr. Harris that an increase in pulse pressure connotes an increased cardiac output. Is it possible that the increased output recorded in line three, Case 1, passes through the arterial system per time unit, whilst both the systolic and diastolic pressures are markedly lowered, unless at least the capillaries are dilated? In Case 6 the second observation shows no rise in pulse, but an increased cardiac output; the diastolic pressure is negligibly lessened, and there is an appreciable rise in the systolic. Is not the explanation of this rise that capillary dilatation has either not occurred at all or at least not sufficient to allow, without increased intra-arterial pressure, the passage of a greater volume of blood in the same time unit? Finally, Case 7 shows, in the second observation, no rise in pulse-rate or systolic pressure, but an increase of cardiac output and a fall of diastolic pressure. It would again seem necessary to recognise that this combination suggests that digitalis is responsible for at least capillary dilatation to allow, at what is a slightly lowered pressure, the passage in the same time unit of an increased blood volume.

In other words, I contend that these cases bear out, inasmuch as conclusion is legitimate from them, what is a law of physics—namely, that an increased flow per unit of time through the arterial system can be obtained only either by increase of the lumina or rise of the intra-arterial pressure, and that, therefore, they render improbable the basis upon which Dr. Harris builds his conception of the pharmacology of digitalis.—I am, Sir, yours faithfully,

W. J. GRANT, M.D.

Fordoun, Kincardineshire, May 21st, 1921.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—The review in THE LANCET of May 21st of the twenty-fourth annual report of the Loomis Sanatorium, New York, deals a much needed blow at the pessimism which has been so prevalent lately in this country with regard to the results of sanatorium treatment for pulmonary tuberculosis. I have recently read an article by a tuberculosis officer in which he arrives at the astonishing conclusion that cases do better in their own homes than in a sanatorium. This may be true in the case of some industrial sanatoriums, judging from certain letters I have received from patients who have had the misfortune to be "treated" in such institutions; but where a sanatorium is so conducted that each individual case is treated on its merits, there can be no question of the benefit of sanatorium treatment, as shown by the results at the Loomis Sanatorium. This cannot be done without sufficient staff and proper equipment, and I am very glad that you have called attention to the inadequacy of both in the public sanatoriums of this country. An X ray installation is a necessity for the proper investigation and treatment of pulmonary tuberculosis, more especially for the control of treatment by artificial pneumothorax, and no sanatorium can be said to be functioning properly if this method of treatment is not utilised in a proportion of cases. It is gratifying to find that dental treatment is considered so important at the Loomis Sanatorium; I have long held a similar opinion, but, further, I think that sufficient attention has not been paid to the hygiene of the upper air-passages. I have seen remarkably beneficial results following, for example, operation for drainage of septic nasal conditions. Another point commented upon in the review, and with which I heartily agree, is that the short length of stay which is the rule in industrial sanatoriums in this country probably accounts to a large extent for the unfavourable

results published. Sanatorium treatment properly conducted still holds the premier place in the treatment of tuberculosis, and excellent results can be obtained in the majority of early cases and in a proportion of advanced cases.

I am, Sir, yours faithfully,

J. M. JOHNSTON, M.B., D.P.H.

Tor-na-Dee Sanatorium, Murtle, Aberdeenshire, May 26th, 1921.

WARMING ETHER VAPOUR FOR INHALATION.

To the Editor of THE LANCET.

SIR,—Dr. K. B. Pinson drew attention last week to the danger of heating ether-laden air by an electric incandescent lamp, and in connexion with this has referred to an intratracheal ether apparatus described by men in your issue of April 2nd. While designing this apparatus I had in mind the accident described by Dr. W. J. McCardie, and have done everything possible to eliminate the risk of such an occurrence. The apparatus when properly connected is vapour-tight, the only place from which the vapour can escape, with the exception of the tube leading to the patient, is through the mercury safety valve, which is adjustable. A manometer is attached to the apparatus. By means of this the pressure at which the vapour is being delivered can easily be seen; the safety valve is therefore only a means of rendering it impossible to raise the pressure above the desired maximum.

In practice one finds that it is quite unnecessary to cause the safety valve to blow off. Furthermore, the length of rubber tubing that I advocate for use between the apparatus and the patient is at least six feet, therefore it is possible to have the apparatus a considerable distance from the patient. I have proved, by putting a thermometer in the current of vapour issuing from this tube, that by adjusting the heater it is possible to maintain a vapour at any desirable constant temperature. In my opinion it is practically impossible for any fire or explosion to take place even if the connexions are faulty.

Dr. Pinson's suggestion of warming the vapour by passing it through a length of rubber tubing placed on the patient's chest would, I think, greatly add to the risk of getting the tube pinched, and, in a number of cases for which intratracheal anæsthesia is used, the tube would impede the surgeon's work.

I am, Sir, yours faithfully,

A. W. MATTHEW,

Anæsthetist to St. Mary's Hospital, &c.

London, W., May 30th, 1921.

THE INTERNECINE VENEREAL CAMPAIGN.

To the Editor of THE LANCET.

SIR,—A writer in your columns (May 21st), signing himself "Morphologist," criticises a recent article of mine in the *Morning Post*, and appears to challenge my right as a layman to express any opinion on current controversies with regard to venereal disease. I have the greatest respect for the opinion of competent experts on subjects exclusively covered by expert knowledge. But the controversial issues with regard to venereal disease are not matters for expert pronouncement. They depend on ethical quite as much as on medical considerations. Indeed, the only medical issue that arises is whether treatment before connexion is more likely to prevent infection than treatment several hours after infection. On this point your correspondent, who says that his name proves that he ought to know his subject, is silent. He confines his argument to points on which his expert knowledge gives him no right to claim papal infallibility.

The issue between the two societies, the S.P.V.D. and the N.C.C.V.D., is very simple. Both accept the fairly obvious proposition that—to quote your correspondent's words—the "fundamental cause of venereal disease is the indulgence in promiscuous sexual intercourse"; both appeal to everybody to refrain from this indulgence; but both recognise that some people will not refrain. Up to this point the two societies have identically the same policy; the divergence then arises. To those men who will not refrain, the S.P.V.D. says: "Take certain precautions in advance"; the N.C.C.V.D. says: "Wait till you have had connexion and then report yourself as quickly as you conveniently can to some public institution where you will receive treatment at the public expense." Since your well-informed correspondent is silent on the relative medical merits of these two plans, I think I am entitled to assume that the former plan is more likely to prevent infection. That being so, I contend, as I argued in the *Morning Post*, that the Ministry of Health is not justified in spending public money in giving effect to the latter plan or in advertising the society that advocates that plan.

Ethically there is no distinction between the two courses. If it is ethically wrong to tell a man how he can help himself to sin in safety, it must also be ethically wrong to set up public institutions to give him a chance of escape after he has sinned. Possibly Dr. Addison and Sir Alfred Mond and the other theologians who direct the policy of the Ministry of Health may argue that their policy is less sinful because it provides less safety. But if they use that argument they confess themselves guilty of hypocrisy in pretending that the purpose of the Ministry is the promotion of the national health.

I am, Sir, yours faithfully,

Gray's Inn, May 24th, 1921. HAROLD COX.

To the Editor of THE LANCET.

SIR,—In his letter to you in THE LANCET of May 21st "Morphologist," attacking Mr. Harold Cox for his support of the movement for the medical prevention of venereal disease, betrays even more ignorance of the subject than that which he attributes to Mr. Cox. I adduce the following comments in justification of this proposition.

1. "Morphologist's" statement that the Society for the Prevention of Venereal Disease recognises the importance of the ethical factor is quite correct; but his further statement that Mr. Cox "fails as a critic" by not mentioning this fact is based on a misconception. The S.P.V.D., while recognising fully the obvious fact that venereal diseases would necessarily be reduced to a minimum, or nearly die out, if promiscuous sexual intercourse could be wholly stayed by ethical or religious teaching, *came into existence* solely because the Royal Commission on Venereal Disease, the National Council for Combating Venereal Diseases, and the Ministry of Health, which has all along supported the recommendations of these bodies, had completely ignored the element of immediate self-disinfection as an essential part of any practical measure for compassing a material reduction of venereal diseases. It is clear that Mr. Cox was aware of this fact, and was in no sense unfair to the S.P.V.D. by omitting to insist on the obvious.

2. "Morphologist" does not seem to know that venereal disease is strictly contagious, and can be directly prevented by personal disinfection; that disinfection is effectual in proportion to the quickness of its application; and that the N.C.C.V.D. advise the use of soap and water, which, being practically unportable, are therefore unavailable in the majority of cases. Neither does he seem to realise that, apart from soap and water, the N.C.C.'s recommendations are—moral injunctions, which have demonstrably failed as a means of prevention—and the treatment of those already infected, which never lessens the *incidence* of any disease. Yet surely even a "learned layman" ought to know that appropriate sanitation is the universally recognised method for diminishing the incidence of all diseases.

3. "M." seems not to know the facts (*a*) that both the Royal Commission on Venereal Disease and the N.C.C. ignored from the outset the discovery of Metchnikoff; (*b*) that by teaching the doctrine arising from this discovery the incidence of venereal disease was reduced in India and England to 1·5 from nearly 100, not by one medical officer, but by many; (*c*) that the War Office proposed to bring in this method (simply teaching) for the whole army; (*d*) that a member of the N.C.C. proposed "packets," which were provided.

But the men in our army were told that these packets were for "*early treatment*," and it is alleged that they obeyed this instruction. It is important to note here what "M." could scarcely be expected to know, that the fact of soldiers having used disinfectants as treatment for the disease was adduced before Lord Astor's Interdepartmental Committee as *evidence* that civilians who were taught to disinfect would use the disinfectants in a similarly erroneous manner. Further misrepresentations of the position and statements of the S.P.V.D. have been officially made and fully dealt with several times in many publications, including the book on "The Prevention of Venereal Disease," by Sir Archdall Reid. Lately the whole matter was investigated by the Birth-rate Commission, which made certain suggestions affording some possible ground for surcease of controversy between the two societies for antagonising venereal disease: but the N.C.C., who favoured the establishment of this inquiry, declined to proceed any further in this attempt.

Ought not your correspondent to have known something more about his subject before charging Mr. Cox with possibly "doing great damage to the nation" by his article in the *Morning Post*?

I am, Sir, yours faithfully,

May 26th, 1921. H. BRYAN DONKIN.

A WIDER FIELD FOR CANCER RESEARCH.

To the Editor of THE LANCET.

SIR,—Do laboratory experiences and statistics derived from ready-made materials form too large a part of cancer research? If cancer comes from without, then the cause of breast cancer may be conveyed direct to the nipple by a contaminated hand. Can it be shown that in no case can this be so? If not, then what excuse is there for not finding out by asking 5000 women doctors and nurses to collaborate in a simple experiment? Would post-operative recurrence be less likely if a vegetarian diet were adopted, since vegetarian races are far less liable to cancer? An American physician, experimenting on a small scale, says "Yes." Experiments with a thousand cases with a like number of controls might settle this.

A case said to be one of Hodgkin's disease is alive after four years. He is doing the sun-cure. Would exposure to light and air influence metabolism in the direction of retarding recurrence in malignant disease? Naked or almost naked races are very little troubled with the disease. The homes of absolutely bedridden persons, and of children, who develop malignant disease, present environments which are unique. A group of expert bacteriologists, entomologists, and public health men might well be employed in examining the surroundings of all such cases. My experience is that this is not done, yet one factor might be discovered common to all. Compulsory disinfection of houses and clothes in one area, the covering and cleaning out of cisterns and covering of food in another, and perhaps an elaborate onslaught on vermin in a third, might be attempted. The Isle of Wight and Isle of Man might be used for such experiments. Is there any case at all for creating special conditions for statistical purposes—not necessarily those mentioned above? I think there is.

I am, Sir, yours faithfully,

Leysin, May 23rd, 1921. PERCY GULLY.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 25TH.

Taxation and National Economy.

ON the motion for the Second Reading of the Finance Bill, Lord R. CECIL complained of the heavy burden of taxation imposed on income-tax and super-tax payers. Direct taxation on a small minority of the population was he said, the very worst form of indirect taxation. He was, satisfied that any system by which they tried to raise the whole of the revenue of the country from the present income-tax payers would be very disastrous. It was not in the least true that the people who were not taxed did not pay. They paid, but without in the least knowing it, and without any direct knowledge of the consequences involved in excessive taxation. All taxation was evil, and had a discouraging effect on industry. The only sound financial policy of the country at the present moment was economy. The Government apparently after prodigious efforts could succeed only in keeping taxation no higher than it was at the present time. That was a most disappointing result.

Sir R. HORNE (Chancellor of the Exchequer), replying to the debate, said he was afraid there was no opportunity for enthusiasm at the present time in matters of finance. It was a question of grinning and bearing the condition in which we were, and facing and confronting facts, rather than by lamenting and bemoaning. The present year was going to have a very testing effect upon the courage and stability and steadiness of our people. But he felt no pessimism whatever about the situation. He was sure that once we emerged from our present troubles the nation would settle down to work with a will which we had not known since the armistice, and he was equally certain that if we confronted the situation with courage we should conquer it by our perseverance and our industry.

The Second Reading of the Bill was carried by 213 votes to 16.

Round-table Liquor Conference.

Major KELLEY asked the Prime Minister the terms and personnel of the round-table conference on liquor restrictions and licensing reform.—Mr. CHAMBERLAIN replied: I hope to make a statement upon this matter in the course of next week.

THURSDAY, MAY 26TH.

A Case of Trench Feet.

Mr. GLANVILLE asked the Minister of Pensions whether he was aware that Frederick Dimmock, No. G. 531161, of the Royal Fusiliers, who is a miner and joined up in 1916, when he was passed A1, served in France till May, 1917, when he was sent home with trench feet to the hospital; that his toes were amputated on August 15th, 1919, and he had to return to hospital for an operation; that he was unable to walk owing to intense pain; that he has a wife and child and had no other means beyond his pension and the unemployment benefit which would shortly end; that the medical reference recommended 80 per cent. pension; and that this had since been reduced to 8*s*. 3*d*. per week, though he was quite unable to work for a living; what action he proposed to take in this case, and whether the man in question could come before a medical appeal board.—Mr. MACPHERSON replied: The disabilities in this case are disorderly action of the heart (attributable to service); hammer toes—not trench feet—and varicose veins (both aggravated by service). The little toe of one foot has been amputated. Aggravation of the hammer toes having passed away no pension for that disability can be awarded therefor. Disablement from the other disabilities was assessed at 30 per cent. by a Medical Appeal Board in July, 1920, and a pension of 12*s*. a week will be in payment until July 19th, 1921. Following that day the rate will be reduced to 8*s*. per week, a recent Survey Board, held with a view to renewal of the award, having assessed disablement at 20 per cent. There is a right of appeal through the Local War Pensions Committee to a Medical Appeal Board against the assessment of 20 per cent. and to the Pensions Appeal Tribunal against the decision that aggravation in the case of the hammer toes has passed away.

Grants for School Camps.

Mr. TREVELYAN THOMSON asked the President of the Board of Education whether he was aware that, notwithstanding the recommendation of the chief medical officer to the Board that school camps should be encouraged, local education authorities were seriously handicapped in making these arrangements by the rulings of the Board

that attendance at lessons given at such camps cannot be reckoned on the school register of attendances if any charge was made to cover the cost of food or any other item of expenditure in connexion with these camps; and, if the Act of 1918 prohibited such charges, could he see his way to bring in an amending Bill to enable local authorities to organise school camps and make a charge to cover the cost of food, which would otherwise be provided by parents, and at the same time count the attendance at lessons given in these camps in the school register so as to qualify for grants.—Mr. HERBERT LEWIS (Parliamentary Secretary to the Board of Education) replied: My right honourable friend understands that the honourable Member is concerned with children who receive instruction elsewhere than at the school in accordance with arrangements approved under Article 44 of the Code, and not under Section 17 of the Education Act of 1918, though the conditions under which they receive such instruction are those of a camp. It appears to him that in such a case the local education authority are competent to exercise their powers under the provision of Meals Acts, 1906 and 1914. The power to make a charge under those Acts is expressly excepted by Section 26 of the Act of 1918 from the general prohibition of charges contained in that section.

Physical Education of Boys.

Colonel Sir CHARLES YATE asked the President of the Board of Education whether out of the 11 inspectors of physical education appointed by the Board of Education 8 were women; and, if so, what steps he proposed to take to place men in charge of the physical education of boys.—Mr. HERBERT LEWIS replied: Seven of the 11 inspectors of physical training are women. My right honourable friend does not see his way to increase the establishment by the appointment of additional men inspectors.

Grants for Clinical Units in Hospitals.

Mr. HOPKINS asked the President of the Board of Education whether he would supply a return setting forth the allocation of the Exchequer grants for university colleges, recurrent and non-recurrent, for the last financial year; and how much of this grant was expended in financing new departures, such as the financing of the University of Cambridge and grants towards the salaries of heads of clinical units in hospitals.—Commander HILTON YOUNG (Financial Secretary to the Treasury) replied: Returns from universities and colleges in receipt of Treasury grants for the academic year 1919–20 have already been presented to Parliament (Cmd. 1263), and they give the information referred to by the honourable Member so far as it is yet available. Similar returns will be presented annually.

Mr. HOPKINS asked the President of the Board of Education what were the principles and regulations under which the University Grants Committee was to recommend the distribution of the Parliamentary grants recently approved by Parliament for the coming quinquennium; was it an implied condition in the allocation of financial aid to university colleges from the extra grant voted by Parliament that they should obtain equal financial assistance from local authorities, and was this principle also to be applied to grants made for the formation of clinical units in hospitals; had the principle of giving building grants to university colleges been authorised, and, if so, the principles on which such grants were to be made; and was it intended to supply Government funds to raise the salaries of the more important professors in university colleges to the same figure—namely, £2000 per annum, as had been fixed for the salaries of the professors who acted as the heads of the newly instituted clinical units in hospitals.—Commander HILTON YOUNG replied: The general principles on which the University Grants Committee base their recommendations for the allocation of grants are set out in the Report of the Committee dated Feb. 3rd, 1921, and in the letter addressed by my right honourable friend to Sir William McCormick printed as an Appendix to the Report, which has already been presented to Parliament. As there stated, great importance is attached to the amount of support provided from local sources in calculating the grants payable to the different institutions, but except in the case of the University of Wales there is no undertaking by the Government to make grants on the basis of pound for pound in respect of rate aid. The Committee are authorised to recommend capital grants for sites, buildings and permanent equipment if the funds at their disposal allow, but no such recommendations have yet been made. The responsibility for fixing the salaries of the teaching staffs rests with the authorities of each institution.

Institutional Treatment of Tuberculosis.

Mr. RONALD M'NEILL asked the Minister of Health whether regulations had recently been made with respect to the institutional and other treatment of tuberculosis by councils of counties and county boroughs; whether such regulations had to be laid before Parliament for confirmation, and, if so, when they would be laid; and whether, before they took effect, an opportunity would be afforded of discussing any regulation the effect of which would be to impose an additional charge on the ratepayers.—Sir A. MOND replied: The answer to the first part of the question is in the negative, and the second part does not therefore arise. The arrangements to be made by the councils of counties and county boroughs for the treatment of tuberculosis upon the termination of sanatorium benefit and the financial proposals in connexion therewith were fully explained in the course of the debates upon the Public Health (Tuberculosis) Act, 1921, and in the White Paper which was circulated explaining the provisions of the Act and the necessary Financial Resolution.

New Liquor Regulations.

Sir JOHN BUTCHER asked the Under-Secretary of State for the Home Department, as representing the Central Liquor Control Board, whether he was now in a position to publish, in the form of a White Paper or otherwise, the modifications which had been recently made in the regulations of the Central Liquor Control Board.—Sir JOHN BAIRD replied: Copies of the recent Orders issued by the Central Control Board (Liquor Traffic) which have been distributed throughout the country are now available for Members. I am circulating a printed copy of the statement published by the Board in explanation of these Orders.

The following is the statement:—

"The Central Control Board (Liquor Traffic) have made Orders dated April 25th and operating on Monday, 2nd May, applicable to all Scheduled Areas in England and Wales consolidating the existing Orders and amending them in the following particulars:—

1. The prohibition of the sale and supply of spirits for consumption off the premises on Saturday is removed, and such sale and supply during the midday period (12 to 2.30 P.M.) on that day is allowed.

2. The provision which fixes a reputed quart as the minimum quantity of spirits which may be sold for off consumption together with the requirement as to the labelling of bottles, is revoked.

3. The hours after 10 P.M. for which magistrates (or, in London, the Commissioner of Police) may grant an Order or licence in pursuance of Section 57 or Section 64 of the Licensing (Consolidation) Act, 1910, are extended beyond the present limit of 11 P.M.

4. The extent to which spirits may be diluted without notice to the purchaser is limited to a strength falling between 30 degrees and 35 degrees under proof.

5. The sale of intoxicating liquor to authorised messes of officers or non-commissioned officers is exempted from the operation of the Order.

6. The requirement that copies of the Board's Orders must be exhibited in every club and in every public room in licensed premises is revoked, and a requirement that copies must be kept on the premises and produced on demand is substituted therefor.

These Orders were published in the *London Gazette* of April 26th, and corresponding Orders have been made for Scheduled Areas in Scotland.

The Government have now announced that no legislation of any kind upon the subject will be possible during the present session, and they have agreed that the relaxations contained in the Orders now published, which have been held over in the expectation that the whole matter was about to be dealt with by Parliament more comprehensively and authoritatively than could be done by the Board, should be made without further delay.

The Board will now proceed to consider what further modifications can properly be made in view of the Government's announcement."

FRIDAY, MAY 27TH.

The Washington Conventions.

Mr. G. BARNES called attention to the fact that the Government had not yet submitted to Parliament certain conventions adopted by the International Labour Conference at Washington, and moved: "That in the opinion of this House the conventions adopted at the International Labour Conference under the League of Nations should be submitted to Parliament as the competent authority." He said that of the three Government Departments concerned the Home Office had given effect to certain of the Washington Conventions by the Act relating to the employment of women and children, and by Departmental Orders; but neither the Ministry of Labour nor the Ministry of Health had given effect to the Labour Chapter. They had failed to deal with the Eight Hours' Convention and the ex-Minister of Health had stated in that House that the Government had decided not to ratify the maternity convention, thereby indicating that the Government assumed to be a law unto themselves. Though the Government were not under an obligation to ratify the maternity convention, they were under an obligation to allow Parliament to have a look at it. If the attitude of the Government was correctly voiced by the ex-Minister of Health it meant knocking the bottom out of the Labour

organisation, which would become a mere cipher in the hands of Governments. The success of the International Labour Organisation depended on results, and if there were no results the failure would delight the hearts of the Bolshevists in this country and elsewhere. It was not only unwise, but it was unfair to those who had helped to build up this labour organisation in the hope of contributing to goodwill, lessening waste from stoppages of work, and improving conditions in the poorer countries.

Dr. MACNAMARA (Minister of Labour) moved to leave out all the words after "That," and add "in the opinion of this House it is not expedient in existing circumstances to proceed with legislation to give effect to the Washington Convention on Hours of Labour." He said that the Government had no desire to evade their pledges in relation to the conventions. To do so would be to fall below the reputation of this country in such matters. The real fact was that as regards most of the conventions we had already a first-class record, and one far in advance of that of any other country. The position of the Government in proposing the amendment was that the great bulk of the proposals had already been translated into definite action and were in effective operation throughout the country.

Viscountess ASTOR said that she thought that the conscience of the country was more awake than that of the Government on the subject of maternity benefit. Before the maternity convention was turned down entirely she suggested that a committee representing women's societies should be called together in order to see what they could get out of the Washington Convention, so that it might be attached to the existing insurance scheme.

Sir M. BARLOW (Parliamentary Secretary to the Ministry of Labour) said it was not the intention of the Government to drop the Hours Bill altogether. Had the Washington Convention been drawn with a little more latitude and elasticity it would have been more easy to apply its provisions. The Cabinet had recently set up a strong Departmental Committee presided over by himself with the desire of getting all international labour matters dealt with expeditiously, and with a view of coördinating the work. With regard to the maternity convention the last word had not yet been said as to the need for further provisions for dealing with the burden of women in industry, and the appeal of Lady Astor would certainly be considered. The Government and the Ministry of Labour desired to work in the most cordial and close coöperation with the International Labour Office of the League of Nations.

On a division the Government amendment was carried by 109 votes to 69.

MONDAY, MAY 30TH.

Medical Officers at Pensions Ministry.

Lieutenant-Colonel CROFT asked the Minister of Pensions whether certain doctors employed by the Ministry of Pensions had had a four years' service contract given to them.—Mr. MACPHERSON replied: The answer is in the affirmative. With the approval of the Treasury and after consultation with my right honourable friend, the Minister of Health, a number of full-time salaried medical officers, whose employment had previously been subject to one month's notice, have been given a four years' contract, terminating on March 31st, 1925.

Lieutenant-Colonel CROFT asked the Minister of Pensions whether he would give an undertaking that the services of those doctors at present employed under the Ministry of Pensions who sacrificed their practices to join the Army and Navy at the outbreak of war and were on active service and were now dependent solely on their salaries would be retained at the Pensions Ministry in preference to those who were already drawing big pensions in addition to their salaries and those who were being kept on who had never served abroad.—Mr. MACPHERSON replied: Practically the whole of the full-time medical officers of the Ministry served during the late war and, other things being equal, preference for retention will continue to be given to medical officers who saw active service over medical officers in the same class who did not so serve.

TUESDAY, MAY 31ST.

Bonus to Tuberculous Trainees.

Mr. ALFRED DAVIES asked the Minister of Pensions whether any definite decision or ruling had yet been given to war pensions committees with regard to the payment of bonus to trainees who had undergone a course of training on the termination of sanatorium treatment for tuberculosis. Mr. MACPHERSON replied: Instructions will be given to the regional offices as soon as the necessary arrangements have been made with the Ministries of Health and Labour.

NEXT Wednesday, June 8th, the Prince of Wales will lay the foundation-stone of the new Institute of Preventive Medicine at Cardiff.

Medical News.

UNIVERSITY OF LONDON.—Dr. R. R. Gates, Ph.D. (Chicago), has been appointed to the University Chair of Botany tenable at King's College, and Mr. D. M. S. Watson, M.Sc. (Manchester), to the Jodrell Chair of Zoology and Comparative Anatomy tenable at University College. Mr. H. G. Jackson, M.Sc. (Liverpool), has been appointed to the University Readership in Zoology tenable at Birkbeck College, and Dr. William Wilson, Ph.D. (Leipzig), D.Sc. (London), to the University Chair of Physics tenable at Bedford College.

At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Girdhar C. Agarwala, London Hosp.; Doris Elizabeth Alcock, London Sch. of Med. for Women; Christopher H. Andrewes (honours, distinguished in medicine, forensic medicine, and surgery, University medal), St. Bart.'s Hosp.; Wilfred M. Anthony, St. Thomas's Hosp.; James R. Banks, Univ. Coll. Hosp.; Mary Rushton Barkas, St. Mary's Hosp.; Frank M. Barnes, St. Thomas's Hosp.; Henry E. Beasley, Univ. Coll. Hosp.; Ursula Poussett Blackwell, London Sch. of Med. for Women; Harold J. Blampied, St. Thomas's Hosp.; John Brodie and Philip C. P. Cloake, London Hosp.; Florence R. Clulow (honours, distinguished in pathology) and Eric V. Corry, Univ. Coll. Hosp.; Elsie E. Cowperthwaite, St. Mary's Hosp. and London Sch. of Med. for Women; Llywelyn ap Ivan Davies, Univ. Coll. Hosp.; Archibald G. Duncan, London Hosp.; Edith M. Evans, St. Mary's Hosp. and London Sch. of Med. for Women; Ada M. Freeman, King's Coll. Hosp.; Isaac Frost, St. Bart.'s Hosp.; Madeline Giles, St. Mary's Hosp.; Henry A. Harris (honours, distinguished in forensic medicine), Univ. Coll. Hosp.; Frank Heber, London Hosp.; James G. Jones, Guy's Hosp.; Dorothy M. Kemp, London Sch. of Med. for Women; M. Kathleen Forsaith Lander, St. Mary's Hosp.; Eugene H. L. Leclezio, Guy's Hosp.; Reginald C. B. Ledlie (honours, distinguished in surgery), Guy's Hosp.; Harold W. Lewis, Middlesex Hosp.; Rhys T. Lewis, Univ. Coll. Hosp.; Margaret Longbottom, London Sch. of Med. for Women; Edward R. Lovell, Middlesex Hosp.; Gerald J. W. McMichael, Univ. Coll. Hosp.; Henrietta A. C. Main, St. Mary's Hosp.; Arthur G. Maitland-Jones (honours, distinguished in medicine), London Hosp.; Claude H. Marshall, Guy's Hosp.; Adeline M. Matland, London Sch. of Med. for Women; Kathleen H. Matthews, St. Mary's Hosp. and London Sch. of Med. for Women; Victor E. Negus, (honours, distinguished in forensic medicine), King's Coll. Hosp.; Sybil M. Nuttall, St. Mary's Hosp.; Sybil G. Overton, St. Mary's Hosp. and London Sch. of Med. for Women; Robert H. Parry, Middlesex Hosp.; Phœbe M. Phillips and Alice D. Pocock, London Sch. of Med. for Women; William R. Rowlands, Liverpool Univ.; Gordon W. R. Rudkin, Univ. Coll. Hosp.; Herbert L. Sackett, St. Bart.'s Hosp.; Ahmal; Shafeek, St. Thomas's Hosp. and Kasr El-Ainy Hosp.; Bryan B. Sharp, St. Bart.'s Hosp.; Katherine J. Shaw, London Sch. of Med. for Women; Philip Steinberg, (honours, distinction in medicine), London Hosp.; Lionel F. Strugnell, St. Bart.'s Hosp.; Richard N. L. Symes, St. Thomas's Hosp.; Raghunath Sabaji Tirodkar, Univ. Coll. Hosp. and Grant Med. Coll., Bombay; Norah E. Trouton, St. Mary's Hosp.; Arthur E. Ward and Sydney A. T. Ware, St. Thomas's Hosp.; Robert W. Warrick, Guy's Hosp.; Frederick W. A. Watt, London Hosp.; Agnes E. Westwood, St. Mary's Hospital; Idwal Glynne Williams and William P. Wippell, St. Bart.'s Hosp.; and Wilfrid C. S. Wood, King's Coll. Hosp.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—E. D. Fenwick (Sects. I. and II.), St. Mary's Hosp.; H. L. Sheehan (Sect. I.), Manchester; and J. Solomonoff (Sects. I. and II.), London Hosp.

Medicine.—F. E. Edwards (Sect. II.), Manchester; M. A. K. El Hennawy (Sects. I. and II.), and E. D. Fenwick (Sects. I. and II.) St. Mary's Hosp.; O. E. Finch (Sects. I. and II.), Toronto; A. Mishriky (Sect. I.), St. Mary's Hosp.; and H. L. Sheehan (Sect. I.), Manchester.

Forensic Medicine.—F. E. Edwards, Manchester; M. A. K. El Hennawy and E. D. Fenwick, St. Mary's Hosp.; O. E. Finch, Toronto; H. L. Sheehan, Manchester; M. Tcherny, Zurich; and R. E. Williams, Guy's Hosp.

Midwifery.—M. A. K. El Hennawy and E. D. Fenwick, St. Mary's Hosp.; M. Fox, Charing Cross Hosp.; A. Senn, London Hosp.; and H. L. Sheehan, Manchester.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery. E. D. Fenwick and J. Solomonoff.

VISIT OF MEDICAL MEN TO AIX-LES-BAINS AND THE SWISS SPAS.—At the invitation of the managers and with the coöperation of the French and Swiss railways, two parties of medical men from this country are visiting Aix-les-Bains and a number of Swiss spas. The itinerary includes Chamonix, Montana, Leuk, Ragaz and Tarasp. The first party of 20 leaves on June 25th under the personal guidance of Sir Henry Lunn.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on May 12th, Sir Anthony Bowlby, the President, in the chair.—The President presented Mr. Harold Burrows, C.B.E., with the Jacksonian prize, Dr. James Sim Wallace with the John Tomes prize, Mr. W. Kelsey Fry with the Cartwright medal and prize, and Mr. Kenneth Parsons with the certificate of his appointment as Begley student.—A report was read from the Court of Examiners respecting candidates found qualified for the Diploma of Member of the College, and diplomas were awarded to 103 candidates mentioned in the report.—A report was read from the Secretary to the Conjoint Examining Board respecting candidates found qualified for the Diploma in Public Health of the Royal College of Physicians of London and the Royal College of Surgeons of England, and diplomas were granted jointly with the Royal College of Physicians to 23 candidates mentioned in the report.—A report was read from the Secretary to the Conjoint Board respecting candidates found qualified for the Diploma in Tropical Medicine and Hygiene of the two Colleges, and diplomas were granted to 21 candidates mentioned in the report.—It was resolved to inform the British Dental Association that the Council were not prepared to institute a Diploma in Public Dentistry at the present time.—A report from the Committee of Management was read announcing that Sir Charles Ballance, the visitor appointed by the Royal Colleges to inspect the examinations of the Egyptian Medical School and Hospital, Cairo, had sent a full and interesting report on the examinations and teaching of the Medical School and Hospital, and that they (the Committee) were of the opinion that the examinations and course of education justified the Royal Colleges in continuing their recognition of the School. It was resolved that the best thanks of the Council be given to Sir Charles Ballance for his services. —The President reported that he had placed the lecture theatre of the College at the disposal of the University of London for a course of four lectures by Prof. Edward Mellanby, of the University of Sheffield, on "Some Actions of Foodstuffs in the Production and Treatment of Disease," to be delivered on June 6th, 7th, 13th, and 14th.—The President reported that the terms of office of Mr. R. Lawford Knaggs and Mr. J. Hutchinson as members of the Court of Examiners would expire on June 8th next, and that the vacancies thus occasioned would be filled up at the ordinary Council on June 8th.—Sir Squire Sprigge was introduced, and admitted a Fellow of the College.

EPSOM COLLEGE.—The annual general meeting of the governors of this medical foundation will be held at 49, Bedford-square, London, W.C., on Friday, June 24th, at 4 P.M., when the result of the voting for pensioners and foundation scholars will be announced.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.—The second annual general meeting of this society will be held at 5.30 P.M. on Monday, June 6th, at the Barnes Hall, 1, Wimpole-street, London, W., kindly lent by the Royal Society of Medicine.

TUBERCULOSIS SOCIETY.—A general meeting of this Society will be held at the Margaret-street Hospital, Margaret-street, Oxford-street, London, W.1, on June 6th, at 7.30 P.M., when the President, Dr. Nathan Raw, will read a paper.

UNIVERSITY COLLEGE HOSPITAL.—The Ladies' Association will hold a sale on Wednesday, June 8th, from 11.30 A.M. to 7 P.M., at Someries House, Regent's Park, London, N.W.1. Princess Helena Victoria will open the sale, at which special features will be an antique stall and a second-hand book-stall.

EXHIBITION OF X RAY PHOTOGRAPHS.—At the Royal Photographic Society's exhibition, opened this week at 35, Russell-square, London, W.C., there is an important section of X ray photographs under the auspices of the Rontgen Society. Comprising upwards of 250 prints, it includes a number of examples from French workers, sent over by special æroplane. In the competition for prizes offered by Dr. R. Knox, president of the Rontgen Society, first prize was awarded to Mr. Suggars, of the London Hospital, and the second to Mr. A. O. Forder, of King's College Hospital. The exhibition remains open during June, from 11 A.M. to 5 P.M.

DONATIONS AND BEQUESTS.—The Trustees of Smith's Charity have contributed £500 to the Royal Waterloo Hospital.—The residue of the estate of the late Mrs. Sarah J. Fellowes, amounting to some £5000, will be divided equally between St. Dunstan's Hostel for Blinded Soldiers and the Church Army.—The executors of the late Frank Rigby, of Abbots Heyes, Chester, have allocated to the Chester Royal Infirmary £10,000. This gift will be used for the endowment of a ward in memory of Mr. Rigby's nephew, who was killed in Palestine.

THE NATIONAL MEDICAL UNION.—During the afternoon of Saturday, May 28th, the eighth annual general meeting of the National Medical Union was held at 11, Chandos-street, Cavendish-square. The main subject for discussion was the creation of a body really representative of the medical profession, and having an influence on its destinies commensurate with that representation. The object of their meeting, as stated by Dr. Blackhall-Morison in an introductory address, was to devise means whereby medicine might regain control of its own development and activities. He pointed out that the preservation of the traditional esprit de corps of the profession was greatly to the benefit of the public; its ethic should be consistently taught together with the theory and practice of medicine. The physician is neither judge nor policeman, and should never be used as such by the administrators of justice in the case of those whom he has attended professionally. The sanctity of the Hippocratic oath should know no exception; it would not hinder the assistance which the medical man can give in the detection and punishment of crime in which his technical knowledge is of service. The growth of knowledge of prevention and of epidemiology had resulted, he said, in the rise of a medical civil service dealing with public medicine. In certain conditions medical men had to be regarded in the aggregate, as in the naval, military, and Poor-law services; members of these services, together with public health officers, would wisely be represented in a central body representative of the entire profession. In such a body the Colonial profession should be represented; the whole would constitute an Imperial Medical Council, a term implying local councils, coördinated with an Imperial centre but absolute in their own spheres. In such an arrangement would lie the germ of an international medical power beneficial to the whole of mankind. The General Medical Council, as at present constituted, could in no sense be regarded as representative of the entire profession; each directly represented member represents between seven and eight thousand members of that profession. The bodies chiefly constituting the Council had maintained an absolute passivity in recent important legislation affecting the profession. To this anomalous situation the National Medical Union must now address itself, in order to establish such a body as the Government, speaking through the Minister of Health, has stated its desire to negotiate with matters of professional interest. Outside the General Medical Council several other bodies regard themselves as generally representative of the profession, but their claims are not admissible; in the General Medical Council itself, the Medical Union contends, there lies the germ of an adequate professional organisation. With the nominated element as it now exists no fault can be found: but for adequate representation 500 members of the profession should be regarded as a unit, resulting in a Government or Parliament of medicine containing 100 members—31 nominated as at present, and the remainder representative; direct representation would then give London 14 members, Provincial England 33, Wales 2, Scotland 8, Ireland 6; the Services might be represented by 3 members, and the Colonies by 6. There would be no great difficulty in the financing of such a body or in establishing its relationship to the Government.

In the evening the Annual Dinner of the General Medical Union was held at the Café Monico, Piccadilly Circus; the chair was occupied by Dr. Blackhall-Morison. After the loyal toast had been drunk the toast of the National Medical Union was proposed by Professor William Russell, President of the Union, who defined the causes for which the Union stood as those of freedom of the medical profession from State interference in its affairs, and freedom of the public in their relations with medical men. No doubt, he said, the State had certain medical duties to perform, but the Medical Union held that it exceeded those duties when the National Insurance Act was introduced. State interference had had a disastrous effect on the profession and on its high ideals; the sense of individual responsibility for individual patients was being destroyed in the medical man, and with it the self-help and independence which had been the glory of the working class of this country. Dr. Blackhall-Morison, responding, described the medical profession as the least organised portion of mankind; he regretted its apathy in the matter of professional interests and also the ingorance which held many medical men back from what they considered to be political matters. Dr. V. T. Greenyer, who proposed the health of the Scottish Medical Guild, briefly described the origins of the Guild, of the London Medical Committee, and of the National Medical Union, which bodies had come into being to combat the State socialism rampart during the war and afterwards. He referred to the recent circularisation of the medical profession in Scotland by the Medical Guild on the subject of the Interim Report of the Consultative Council to the Ministry of Health, which had shown the majority of that

portion of the profession to disapprove both of the extension of national insurance and of the terms of the Interim Report.

NORTH OF ENGLAND TUBERCULOSIS SOCIETY: POST-GRADUATE COURSE.—A small party attended the course recently held in Paris under the auspices of the Society. The visitors were impressed with the work being done at Berck-Plage for crippled children and the arrangements for treatment of pulmonary cases at Bligny sanatorium, and especially with the thoroughness in diagnostic methods and treatment of Dr. E. Rist at the Laennec Hospital, where artificial pneumothorax is practised. The members were hospitably welcomed at the various institutions visited, and appreciated the courtesy and helpfulness of Dr. Rist and his colleagues Dr. E. Sorrel, of Berck-Plage, Dr. Guinard, of Bligny, Dr. Besredka, of the Pasteur Institute, and Dr. Williams and Dr. Soper, of the Rockefeller Commission in France.

PAYING PATIENTS IN THE BRISTOL VOLUNTARY HOSPITALS.—The two principal voluntary hospitals of Bristol, the Royal Infirmary and the General Hospital, have simultaneously decided upon the collection of payments from patients; a guinea per week from in-patients, and a small fee at registration and on subsequent visits from out-patients. Each institution will appoint an almoner, and it is to be clearly explained to all patients that their contributions are towards the cost of maintenance and in no sense payment for the services of the honorary staff. The proposals are frankly experimental, and designed to meet the present financial emergency. The Royal Infirmary, it may be added, has recently received from its President, Mr. H. H. Wills, a present of securities sufficient to bring in about £5000 per annum.

ANTI-VIVISECTION HOSPITAL (BATTERSEA GENERAL HOSPITAL, INC.).—Lord Tenterden, who presided at the annual court of governors of the hospital on May 26th, said that it was highly satisfactory that during the past 11 years this hospital—so far as he knew, the only hospital of its kind in the world—could show an excess of income over expenditure. Nevertheless, the board would have to consider the necessity of closing down some of the wards unless a more assured annual income was forthcoming. The number of out-patient attendances in 1920 was 11,557, 6000 more than the year before. Mr. Steward, representing the Hospital Saturday Fund, said that when he visited that beautiful hospital the patients told him they could not be more kindly or efficiently treated, and he could only say that it was worthy of wholehearted support. The retiring members of the board were re-elected.

NEW ASSOCIATION OF SCOTTISH WOMEN'S HOSPITAL UNITS.—A meeting was held on May 30th in the building of the Gynæcological and Obstetric Unit of the Royal Free Hospital of past members and friends of this unit, to discuss the formation of an association to endow or maintain beds in the unit, of which Professor Louisa McIlroy is the director. A resolution in favour of such an association was passed unanimously, and a committee was formed. Lady Selborne presided, and among the speakers were Mrs. Russell, M.D., Miss F. Ivens, M.S., and Sir Courtauld Thomson, who paid a tribute to the excellent work done by the hospital units under Professor McIlroy in Salonica and in Constantinople, and congratulated the Royal Free Hospital on having secured her services. The cost of maintenance of each bed is £200 a year. Donations and subscriptions should be sent to Miss Dorothy Willis at the Royal Free Hospital, Gray's Inn-road, W.C.1.

LONDON SCHOOL OF TROPICAL MEDICINE.—A prize has just been instituted at this school in memory of the late Dr. W. H. Langley, C.M.G., Principal Medical Officer of Southern Nigeria. Dr. Langley died in the year 1912, and the fund was raised principally on the coast. The war intervened and all the papers, subscription lists, &c., went down in the s.s. *Umgeni*, when Dr. Lynch Burgess, of the West African Medical Service, who was treasurer, lost his life. Dr. Thomas Hood, C.M.G., and Major Gerald Bell, two of those originally connected with the movement, have made arrangements for setting up the memorial in connexion with the school. The prize (about £30) is to be awarded triennially and is open to competition among officers of the West African Medical Staff, whether on the active or retired list. The award will be made in respect of the best paper written on one of the following subjects: (*a*) Tropical Medicine or Surgery; (*b*) Tropical Hygiene and Sanitation; (*c*) Tropical Entomology and Parasitology. The first award will be made in the year 1924. Papers should be delivered to the Secretary, Seamen's Hospital Society, Greenwich, London, S.E., on or before Oct. 1st, 1924.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, June 9th.—Papers:—Prof. C. S. Sherrington: Break-shock Reflexes and "Supramaximal" Contraction-response of Mammalian Nerve-muscle to Single-shock Stimuli. Mr. R. J. Ludford and Mr. J. B. Gatenby: Dicytokinesis in Germ Cells, or the Distribution of the Golgi Apparatus during Cell Division (communicated by Prof. J. P. Hill). Dr. F. W. Edridge-Green: The Effect of Red Fatigue on the White Equation (communicated by Prof. W. M. Bayliss). Mr. E. Ponder: A Method for investigating the Hæmolytic Activity of Chemical Substances (communicated by Sir E. Sharpey Schafer). Mr. W. H. Pearsall: The Development of Vegetation in the English Lakes, considered in Relation to the General Evolution of Glacial Lakes and Rock Basins (communicated by Mr. A. G. Tansley).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

THURSDAY, June 9th.—5 P.M., Croonian Lecture:—Dr. F. L. Golla: The Objective Study of Neurosis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, June 6th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Demonstration of Cases, Surgical Wards. 5 P.M., Lecture:—Dr. A. Saunders: Gastric Disorders in Adults.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 P.M., Dr. Pritchard: Demonstration of Cases, Medical Wards. 5 P.M., Clinical Lecture:—Mr. Banks Davis: Throat, Nose, and Ear.

WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Gibb: Eye Department. Dr. Owen: Medical Out-patients. 5 P.M., Lecture:—Dr. Morton: Carbon Dioxide Snow.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. A. Eichholz: Extraordinary Children—their Treatment and Management (open to all Medical Practitioners).

FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. MacDonald: Retention of Urine.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, June 6th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. Russell Reynolds: X Ray Demonstration of Spinal Cases.

TUESDAY, June 7th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Mr. Armour: Surgical Treatment of Spinal Cord Tumours (I.).

THURSDAY, June 9th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Tumours of Spinal Cord (II.).

FRIDAY, June 10th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Mr. Sargent: Surgical Treatment of Exophthalmic Goitre.

NEUROLOGICAL OPHTHALMOLOGY.

WEDNESDAY, June 8th.—3.30 P.M., Mr. Leslie Paton: Optic Atrophy.

Fee for Post-Graduate Course £7 7*s*.

C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.

Courses of Lectures:—

A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.

TUESDAY, June 7th.—5.15 P.M., Lecture X.: Diagnosis.

FRIDAY.—5.15 P.M., Lecture XI.: Treatment.

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

THURSDAY, June 9th.—4.30 P.M., Lecture V.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

TUESDAY, June 7th, and THURSDAY.—4.15 P.M., Mr. R. Howard: Diseases of the Breast.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, at the Maudsley Hospital, Denmark-hill, S.E.

TUESDAY, June 7th.—4.30 P.M., Maudsley Lecture: Sir Frederick Mott.

UNIVERSITY OF LONDON.

Advanced Lectures to Students of the University and to others interested in the subject.

A Course of Three Lectures in Embryology on Recent Advances in Experimental Embryology, to be given by Prof. E. W. MacBride at the Imperial College, Royal College of Science, Exhibition-road, S.W.

TUESDAY, June 7th, WEDNESDAY and THURSDAY.—5 P.M., Lectures I., II., and III.

A Lecture in Medicine on Permeability in Physiology and Pathology, to be given by Prof. H. J. Hamburger at the Rooms of the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY, June 8th.—5 P.M.

A Course of Four Lectures in Pharmacology, on Some Actions of Foodstuffs in the Production and Treatment of Disease, to be given by Prof. E. Mellanby at the Royal College of Surgeons, Lincoln's Inn-fields, W.C.

MONDAY, June 6th, and TUESDAY.—5 P.M., Lectures I. and II.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.

TUESDAY, June 7th.—4.30 P.M., Lecture VI.: Prof. E. H. Starling: The Heart in Exercise.

UNIVERSITY COLLEGE (UNIVERSITY OF LONDON), Gower-street, W.C.

A Course of Four Advanced Lectures in Hygiene to Students of the University and to others interested in the subject.

MONDAY, June 6th, and FRIDAY.—5.30 P.M., Dr. C. Porter: Recent Developments in Legislation for the Prevention of Disease. (Lectures III. and IV.)

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 9th.—4 P.M., Lecture:—Mr. Pitts: Oral Sepsis.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-Graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

MONDAY, June 6th.—Mr. N. C. Lake: Intussusception.

TUESDAY.—4 P.M., Mr. A. H. Todd: Common Disabilities of the Lower Limbs (other than Paralytic) in Children (II.).

THURSDAY.—4 P.M., Mr. B. W. Howell: Treatment of Injuries to the Elbow (with cases).

FRIDAY.—2.30 P.M., Mr. J. Taylor: Treatment of Anterior Poliomyelitis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, June 10th.—5.15 P.M., Lecture VI.: Mental Mechanisms: Conflict: Regression: Repression: Complete Formation: Transference: Compensation.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.

A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.

THURSDAY, June 9th.—4.30 P.M., Prof. H. Head: Release of Function in the Nervous System.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, June 7th.—4.30 P.M., Lecture:—Dr. W. F. Shaw: Malignant Disease of the Uterus.

Appointments

COATES, V. M., M.A., M.D., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Assistant Physician to the Royal United Hospital, Bath.

MCARTHUR, J., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., Medical Officer of Health for Conisborough Urban Council.

ROBERTS, EVA, M.B., Ch.B. Manch., Medical Officer of Health (temporarily) for Isleworth.

WOOD, W. B., M.D. Lond., Assistant County Medical Officer, and to act as Tuberculosis Officer for Grays, Tilbury and Orsett.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Res. S.O. £250.

Bedford County Hospital.—Asst. H.S. £150.

Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. Phys. £350.

Birmingham. Queen's Hospital.—Surg. Registrar. £100.

Birmingham University.—Demonstrator of Anatomy. £300.

Bradford Royal Infirmary.—H.S. £200.

Brighton, Royal Alexandra Hospital for Sick Children.—Hon. Anæsth. Hon. Radiologist.

Brighton, Royal Sussex County Hospital.—Three H.S.'s. Cas. H.S. and H. Anæsth. Each £120.

Bristol Royal Infirmary.—H.P., H.S., H.S. to Ear, Nose, and Throat Dept., Cas. O., and Ophth. S. Each £120.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Charing Cross Hospital, Agar-street, W.C.—Phys. in charge of Children's Department. Asst. Phys.

Colchester, Essex County Hospital.—H.S. £200.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Phys.

Evelina Hospital for Children, Southwark, S.E.—Phys. to Out-patients.

Exeter City Mental Hospital.—M.O. £300.

Hackney Union Infirmary.—Jun. Asst. M.O. £414 16*s.* 10*d.*

Hull Royal Infirmary.—Asst. H.S. £150.

Leeds Infirmary, Beckett-street.—Asst. M.O. £400.

Liverpool Royal Southern Hospital.—Two H.P.'s and three H.S.'s. Each £100.

Liverpool Stanley Hospital.—Three H.S.'s. Each £120.

London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Two Res. M.O.'s. £100.

London Lock Hospital, 91, Dean-street, W.—Clin. Assts.

Manchester Royal Infirmary.—H.P. £50.

Ministry of Pensions, Birmingham Orthopædic Centre.—Jun. Res. M.O. at the Highbury, Uffculme, and Sorrento Group of Hospitals. £350 to £400.

Newcastle-on-Tyne, City Hospital for Infectious Diseases, Walker-gate.—Res. Med. Asst. £350.

Newcastle-on-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.

Newport, Mon., Royal Gwent Hospital.—Hon. Radiologist.

Nottingham Children's Hospital.—Res. H.P. (female). Res. H.S. (female). Each £180.

Plymouth, Borough of.—Asst. M.O.H. £500.

Preston and County of Lancaster Royal Infirmary.—H.S. £200. H.P. £200.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. P. or S. to X Ray Department.

Queen Mary's Hospital for East End, Stratford, E.—Cas. O.

Rotherham Hospital.—Jun. H.S. £150.

Royal Dental Hospital of London, Leicester-square, W.C.—Two Hon. Anæsths.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S. £50. Hon. Anæsth.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

Royal National Orthopædic Hospital, 234, Great Portland-street.—Res. H.S. £150.

Royal Waterloo Hospital for Children and Women.—Hon. Phys. for Out-patients.

Salford Royal Hospital.—Anæsth. £50. H.S. and Cas. H. S. Each £150.

Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.

St. Helens Hospital, Lancashire.—Res. M.O. £250.

St. Pancras Hospital.—Asst. M.O. (female). £300.

Southampton Free Eye Hospital.—H.S. £200.

South Uist, Parish of.—M.O. and Public Vaccinator. £170.

Stamford, Rutland and General Infirmary.—H.S. £250.

Taunton, Taunton and Somerset Hospital.—Sen. H.S. £200. Jun. H.S. £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.

West End Hospital for Nervous Diseases.—Asst. P.

West London Hospital, Hammersmith-road, W.—Two H. P.'s, H.S. Each £50. P. Neurologist.

Wigan Education Committee.—Female Asst. Sch. M.O. £500.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Barnard Castle, Darlington, and Richmond County Courts in Circuit No. 2, and the Leyburn and Northallerton County Courts in Circuit No. 15. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than June 22nd.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshops Acts at Walton-on-Naze (Essex).

Births, Marriages, and Deaths.

BIRTHS.

CUNNING.—On May 23rd, at Upper Wimpole-street, the wife of Joseph Cunning, F.R.C.S., of a son.

GOODWIN.—On the 30th May, at a nursing home, to Elsa Mary, wife of Aubrey Goodwin, M.D., a son (Timothy Rudhall).

HANCOCK.—On 28th May, 1921, at Trevaunance Cottage, Howe Green, Chipstead, Surrey, the wife of Allen Coulter Hancock, M.C., M.R.C.S., L.R.C.P., D.P.H., of a son.

SANDILAND.—On May 19th, in Shrublands Nursing Home, Croydon, the wife of Ernest L. Sandiland, M.B., B.S., D.P.H., of a son.

SHEPHARD.—On May 23rd, at Latymer House, Sheerness, the wife of Dr. Hopper Shephard, of a son.

DEATHS.

BEALY-SMITH.—On May 26th, at Manchester, Richard Leonard Bealy-Smith, M.R.C.S., L.R.C.P., aged 53 years.

WILLIAMS.—On May 29th, at Queen Anne-street, W., Campbell Williams, F.R.C.S., aged 62 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE ECONOMICS OF INFANT WELFARE.

A MEETING of the National Baby Week Council was held at Armitage Hall, Great Portland-street, London, W., on May 24th, when the reports of the Chairman of the Executive Committee and of the Hon. Treasurer were submitted and addresses read.

Dr. ERIC PRITCHARD, chairman of the Executive Committee, who presided, said that the three special phases of child welfare work, which the Council were emphasising this year, were (1) the importance of breast-feeding, (2) the urgent need for some scheme of pensions for civilian widows, and (3) the prevention of blindness with special attention to the infectiveness and treatment of ophthalmia neonatorum. It was hoped that the National Baby Week Council and the Health Week Committee would work in close coöperation. The National Baby Week Council would celebrate its fifth birthday from July 1st to 7th, but it had been suggested that combined Health and Baby Week celebrations might be held in the provinces and in Greater Britain in October.

Mr. J. MARSDEN, the hon. treasurer, said that subscriptions and donations were greatly needed. On the basis of last year's work about £150 would be required. There was a balance at the bank of about £150, and it was hoped that another £300 would speedily be forthcoming.

Economy in Life.

Dr. MABYN READ, medical officer of health for Worcester, then read an inspiring address on the successful efforts to improve infant life in the city over the health of which he presided. The population of Worcester in 1900, he said, was 48,000; it was now about 50,000. When he was appointed medical officer of health in 1891 the infant death-rate was 208 per 1000. During the first five years of the present century it was 145, in the next five years 124, from 1910 to 1914 it fell to 94, in the next five years it was 69, and last year the figures showed 67 per 1000. The three individual years previous to this—namely, 1917, 1918, and 1919—showed 64, 60, and 61 per 1000 respectively. Previous to the founding of the Infant Health Society in 1907 there had been no particular health activities, though some 200 of the worst houses had been removed—a small proportion in a total of about 11,000 dwellings. The Infant Health Society began with one health visitor, but in 1910 the city council gave a grant to the Society and two years later took over the health visitor as an official. A second health visitor was appointed in 1915. Though some classes for mothers were held, no clinics were started till 1917 when a lady doctor was appointed giving half her time to the clinic and half to school work. In 1919 the Society obtained a grant from the American Red Cross Society and established an antenatal clinic. During the progress of the Society milk was provided for mothers and children, and was now supplied by the city council. In 1913 dinners were given to expectant mothers, and a small amount of dental treatment was given; both these activities were limited by the finances of the Society. From 1910 onwards, at the classes for mothers, the infants were weighed. No difficulty had been experienced in obtaining a welcome for the health visitor in the homes of the poor, and an important factor in the progress of the work was the coöperation and sympathy of the midwives. When difficulties had occurred, Dr. Read said, he called the midwives together, when matters were soon smoothed out. Some 16 midwives attended about 80 per cent. of the births in the city. The prevalent opinion among the mothers now was that it was a disgrace to have an unhealthy baby. The good results had been almost entirely due to home visiting. At the present time there were four health visitors and an antenatal centre, which was kept constantly full by the recommendations of the midwives.

Economy in Efficiency and Economy in Health.

Miss ELEANOR RATHBONE (Liverpool) deplored the lack of provision made by the State for babies, motherhood not being recognised as work of public importance. The poverty period of the ordinary working-class family came just at the time when the mother was bearing children, and this had most serious effects upon the race. Nothing could be more wasteful or more extravagant than the present system of neglecting mothers and children. Was it not about time that the nation should recognise that its baby crop was as important as its wheat crop?

Dr. LEONARD HILL said that health, including the health of the baby, was bound up very largely with the question of coal. With our wasteful methods of using it only about 5 per cent. of its energy and heat value was utilised, the other 95 per cent. polluting the atmosphere and setting up conditions which caused ill-health and dirt. We were now experiencing the benefits of unobscured sunlight as a result of the coal shortage, and he instanced the advantages of sunlight and fresh air as seen in the results to tuberculous children in Alpine climates, where they ran about covered with only a loin cloth. The effects upon these diseased children were extraordinarily good. If this life and open air schools were good for the diseased the same conditions should be good for the healthy. In London he believed there were only two open-air schools, while in New York there were 120.

Prof. E. L. COLLIS said that economy consisted in spending money wisely and well, and that it must not be confounded with parsimony. By a long series of enactments during the past 100 years, the country in the interests of economy had been nationalising the care of health. The first test of spending money wisely was the return on expenditure. On the credit side was the productive activity, mental and physical, of the adult members of the nation. But the results of nationalising the care of health had not as yet produced the most economical results. In order to obtain a healthy nation the first need was healthy babies. The standard of health of children at birth was fairly satisfactory and it ought to be maintained and improved. Girls in schools should be taught mother-craft. Money spent on health visitors was true economy. It was cheaper to spread a knowledge of fresh air and cleanliness than to patch up casualties in sanatoriums and dispensaries.

In a short discussion which followed, reference was made to the need for better housing conditions, and for supplying children with milk in the interests of sound teeth.

UNITED STATES ARMY RATIONS.

IN the April number of the *Military Surgeon* Major C. C. Mason and Capt. A. T. Shore speak of the work done in France by the officers of the Food and Nutrition Section, American Medical Corps, attached to the Division of Laboratories and Infectious Diseases. These were staff officers who considered whether the men got good meals regularly, and if not, what was wanted—whether more food, better food, better distribution, better cooking, or better mess equipment. Much bread was at one time lost from an epidemic of mould, and this was looked into. Meat was supplied to the army "in better condition than to the average American home." It was difficult to arrange that all men should get rations, for on Monday demands were sent in, but not till Wednesday were the rations received, and meantime 30 new men might have joined: but eventually the telephone minimised this difficulty. There were mess sergeants who saw to the drawing and the storage of rations, serving of food and prevention of waste, but it is noted that these sergeants should not be chosen merely because they are unfit for other soldierly duties, and that cooks, too, should not be selected in the companies on the sole ground that they are flat-footed men. In an appendix there is a statement of the various rations served out to American

Table of Rations (in ounces).

Ration.	Garrison.	Field.	Travel.
	oz.	oz.	oz.
Beef, fresh	20	—	—
,, canned	—	16	12
Soup cubes	—	1·76	—
Bread, soft	16	—	16
,, hard	—	16	—
Baking powder	0·08	—	—
Potatoes, fresh	20	—	—
,, dehydrated ..	—	4	—
Beans, dry	4	4	—
,, baked, canned ..	—	—	4
Tomatoes, canned ..	—	—	8
Butter	0·5	—	—
Milk, unsweetened, evaporated	1	1	1
Coffee	1·12	1·12	1·12
Sugar	3·2	3·2	2·4
Jam	3	3	2
Candy	0·8	—	—
Chocolates, sweet ..	—	1	—
Salt	0·64	0·16	—
Tobacco	0·4	0·4	0·4
Pepper	0·02	—	—
Cinnamon	0·014	—	—
Vanilla	0·014	—	—
Vinegar	0·8	—	—
Alcohol (solidified) for cooking	—	2	—

soldiers. We print above the ordinary daily or "garrison" ration, the "field service" ration, and the "travel" ration drawn by men doing little work in troop trains.

The authors of the paper suggest that commanding officers might, with advantage, take greater interest in their cooks and kitchens—"men fight only once in a while, but eat three times a day."

THE EVIDENTIAL VALUE OF CERUMEN.

IN the future it will be the mark of a clever criminal to throw dust, not into the eyes of the police, but into his own ears. Dr. Severin Icard[1] has shown recently that among the trade marks borne infallibly, if unintentionally, on the bodies of industrial workers must be counted the dust adhering to the cerumen in the external auditory meatus. It appears that the most careful toilet will not remove all traces of a man's past environment, but only the use of a small instrument for curetting the meatus, and even so, the operation is not without considerable risk in unskilled hands. Moreover, it is easy to imagine that a completely wax-free ear might prove in itself a cause for suspicion on the part of an examining counsel. Even the alternative method of concealment which we have indicated might well fail under the searching investigation of the technique devised by Dr. Icard. Specimens of wax are examined by him both quantitatively and qualitatively, both under the microscope and by chemical tests; it might well be that a lead-miner who had filled his ears with coal-dust would fail in his deceit as much by the presence of an excessive quantity of coal as by the discovery of a contemporary layer of lead.

SARAH GAMP OF ARABIA.

THOSE who lament the existence of unqualified midwives in England may derive some measure of consolation from the reflection that in some other parts of the world conditions may be even more cruel. It would be difficult to find sadder stories in all the annals of child-birth than those told by Doctor Thierry-Detaille, of Bizerte, in the May number of *Tunis Médical*. He tells first of a primipara, aged 18, to whom he was called by the patient's sister. It appeared that after the girl had been in labour three days her native attendant had confessed her inability to do any more. The doctor recognised by her feverish appearance that the attempts made in these three days had not been without their malign results. The temperature was 101° F. and the pulse 130. Vaginal examination discovered a fœtal head, firmly engaged, with the cranial vault completely denuded. The dead child was delivered by forceps, and it was then seen that a portion of the scalp as large as a five-shilling piece had been torn from the child's head. The family stubbornly refused to allow the young mother to be taken to a hospital, so she remained in the care of the Arab attendant until she died a fortnight after her first-born. His second story is of another native "midwife" who considered that a prolapsed cord was a heaven-sent aid to help her extract the baby. In this case the mother, who was a 3-para, survived, but the child was of course killed. There is room in North Africa for a lot of health propaganda.

THE CARE OF MENTAL DEFECTIVES.

THE training and after-care of mental defectives was the subject of discourse by Dr. F. R. P. Taylor, medical superintendent of the Hellingly Mental Hospital, at the annual meeting, held at Brighton on May 18th, of the Guardianship Society. Dr. Taylor considers that all mental defectives should receive some training in establishments specially set apart for the purpose, and believes that with suitable training a very large proportion of mental defectives could be made at least partially self-supporting. Provision for the future could be made in two directions: (1) by a central colony—preferably attached to a special school—where, after attaining a certain standard, children should be boarded out in cottage homes with foster parents, and attend daily at a central block of workshops; or (2) by the methods employed by the Guardianship Society. The latter scheme had many advantages, and most nearly restored the child to homelike surroundings. The work of the Society was of real benefit, not only in providing for the happiness and welfare of the individual mental defective, but also for the protection of society and of the race.

The Guardianship Society provides for the supervision of the mentally defective: (1) by boarding out in carefully chosen families; (2) by assisting them to obtain training and employment suitable to their capabilities; and (3) by visiting them and taking a friendly interest in their moral and material welfare. The Society's record for the year just ended shows that the fresh applications made during the year numbered 358, compared with 243 in the previous year. The number of fresh patients actually taken was 185, against 156 last year. 369 patients were cared for as against 445, and the number remaining at the end of the year was 206 as against 184. Two patients were removed from institutions and put under guardianship, and one patient was transferred from an asylum to guardianship. The committee considered this was particularly satisfactory as justifying the view of the Society that certain cases were better suited to this method of care than to institutional treatment.

During the year 46 cases had been under supervision in their own homes at the request of the Brighton corporation, and four certified patients had been entirely self-supporting, thus saving at least £200 to the ratepayers. At the present time the Society had 20 patients entirely, and 32 patients partially self-supporting.

[1] Marseille-Médical, April 1st, 1921, p. 289.

HUGH MORTON (UNREGISTERED).

AT the Marylebone Police-court on May 9th, Hugh Morton, of Park-lane (formerly of 15, Cavendish-place), appeared to answer three summons under the Venereal Diseases Act, and one summons under the Medical Act, issued against him at the instance of the Medical Defence Union, Limited. The facts upon which the prosecution relied were admitted by the defendant, and the magistrate after hearing counsel, and without calling witnesses, imposed a penalty of £30 in respect of each offence under the Venereal Diseases Act, and £20 in respect of the offence under the Medical Act, with 5 guineas costs on each summons; and sentenced the defendant to two months' imprisonment in default of payment of the fines and costs within seven days.

HYGIENE IN THE KINEMA.

As the result of the activities of a local health society, the sanitary condition of local kinemas has been under review by the East Ham Borough Council. An opportunity was afforded us of inspecting the new Coronation Cinema at Manor Park, London, E., prior to its formal opening by the Mayor of East Ham on Saturday, May 28th. It is a large and airy building, seating 2000 persons individually, wide aisles, and a number of exit doors providing means for rapid emptying in case of need. Ventilation shafts are arranged for the inlet of cooled air in summer. The aim of the managers to provide healthy conditions under which entertainment can be enjoyed has been successfully carried out.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	£2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

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